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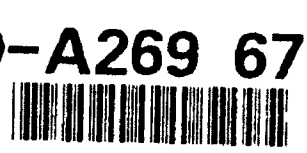

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Monterey, California

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Marshaling and Acquiring Resources for the Process Improvement Process

by

Lieutenant Carol E. Shivers

June 1993

Thesis Co-Advisors: **Kenneth J. Euske**
Jeffrey M. Nevels

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Marshaling and Acquiring Resources for the
Process Improvement Process

by

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Lieutenant, United States Navy
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Submitted in partial fulfillment of the
requirements for the degree of

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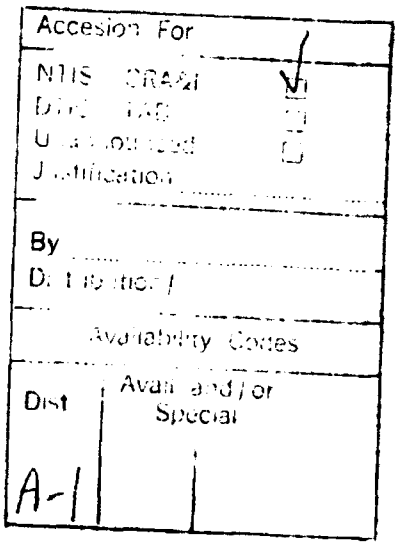
ABSTRACT

This thesis examines the issues associated with the marshaling and acquisition of resources by the Department of Defense functional manager for implementing and continuing the process improvement process. Additionally, it identifies resources which are currently available for process improvement and provides points of contact for obtaining further information about them. The thesis also illustrates how process improvement resources are organized within the Department of the Navy and provides points of contact for those, as well.



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I. INTRODUCTION

This thesis discusses the resources available to Department of Defense (DoD) functional managers for implementing and sustaining the process improvement process within their organizations. It also provides guidance to the functional manager on how to identify needed resources and how to acquire those resources once the need is identified. Additionally, the thesis presents general information on issues the functional manager should consider in acquiring and marshaling those resources.

The thesis is organized into ten chapters. Chapters I through III present background information, discuss the relationship between process improvement and the functional manager and define what is encompassed by the phrase "process improvement process." Chapter IV addresses how customers and suppliers may impact process improvement, and the issues surrounding their identification which may influence how the functional manager marshals and acquires resources. Chapter V discusses why employees are a critical resource, and how the functional manager may maximize their potential contribution to the improvement effort. Chapter VI presents issues involved in the marshaling of resources for education and training. Chapter VII discusses the resources the functional manager may acquire for continuing process improvement once it has been implemented. Chapter VIII identifies specific external resources for process improvement, and Chapter IX

presents resources available to Department of the Navy functional managers. Appendices A, B and C are items adapted from current articles on process improvement and illustrate some of the basic principles discussed in the body of the thesis. Appendices D and E are a list of contact points for gaining additional information about available resources within the DoD. Appendix F is the vision, goals and strategy statement of the Department of the Navy.

It is not within the scope of this thesis to provide the "how to's" of process improvement. The resources described in the body of the thesis, and which are available to the DoD functional manager, provide step-by-step instructions and guidance for implementation and maintenance of the process improvement process.

A. BACKGROUND

In 1989 the Secretary of Defense announced the creation of the Corporate Information Management (CIM) initiative, which emphasized:

- the standardization, quality and consistency of computer data
- the review and standardization of information requirements
- the review of information system development processes and procedures

In November of 1990, and in support of the CIM initiatives, all of the DoD's automated data processing management was moved from the DoD Comptroller to the Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD C3I). The position of Director of Defense Information was created to execute the CIM initiative. Concurrently, the Defense Information

Systems Agency was established to provide overall technical oversight and support to the director.

The original emphasis of CIM has shifted from the consolidation of Data Centers and selection of standard information systems to the development of more fundamental standards for business practices and processes. The current prevailing focus of CIM is on management methods, and the primary objective is business process improvement. Budget constraints require that functional managers define their information technology needs in terms of the most economical and efficient business process possible; that is, the basic business activity must be pared to the most economical and efficient "value added" process practicable.

The functional manager, then, must not only develop an atmosphere where process improvement is possible, but must know what resources are available to make the process improvement process happen. The functional manager must also know which of those resources are required by their organization for the implementation and maintenance of process improvement. This thesis discusses these and related issues. The requirement for this research was formally identified by the Redesign Experts and Practices (REAP) team, a Naval Postgraduate School Administrative Sciences' faculty and student research group, as part of a funded project sponsored by the Director of Defense Information. (REAP Team, 1992)

B. THE BENEFITS OF PROCESS IMPROVEMENT

Michael Hammer, the president of an information technology consulting firm, points out in an article on process improvement that:

> The usual methods for boosting performance—process rationalization and automation—haven't yielded the dramatic improvements companies need. In particular, heavy investments in information technology have delivered disappointing results—largely because companies tend to use technology to mechanize old ways of doing business. They leave the existing processes intact and use computers simply to speed them up. (Hammer, 1990, p. 104)[1]

There is a solution, according to Hammer. He goes on to state:

> It is time to stop paving the cow paths. Instead of embedding outdated processes in silicon and software, we should obliterate them and start over. We should "reengineer" our businesses: use the power of modern information technology to radically redesign our business processes in order to achieve dramatic improvements in their performance. (Hammer, 1990, p. 104)

It is not sufficient, then, for the functional manager to simply automate existing processes in order to gain the improvements mandated by CIM. Automating inefficient processes means only that the organization can complete inefficient processes more quickly. As a recent article in the *Wall Street Journal* points out, process improvement in the private sector is:

> ...a technique for finally getting the elusive productivity improvements that companies had hoped to reap from the hundreds of billions of dollars they invested in data-processing equipment over the past couple decades....Virtually all economists agree that re-engineering (work processes) ultimately should bring about faster economic growth, greater international competitiveness, higher real wages on average for the work force and improved living standards. Like minerals in the ground, people are a natural resource. If millions of workers can be freed from tasks like processing mortgage applications, they will be

---

[1]Michael Hammer is generally credited with coining the term "reengineering" as applied to the improvement of business processes prior to automation. A former Massachusetts Institute of Technology computer science professor, Mr. Hammer developed his reengineering insights while advising clients of his consulting firm on how to use information technology effectively. Mr. Hammer uses the term "reengineering" in much the same way as the term "process improvement" is used throughout this thesis, although "reengineering" does encompass issues peculiar to the world of data processing and process automation. (Ehrbar, 1993) However, Mr. Hammer's insights are applicable in every sense to the issues encompassed by the term "process improvement."

available to produce other goods and services that don't exist now. (Ehrbar, 1993, sec. A, p. 1)

Those private organizations which have implemented process improvement have realized dramatic results. Some selected gains from private industry are (Johnston and Daniel, 1992, pp. 15-19):

- decreases in inventory of 23 percent
- delivery times reduced to four and one-half days from 20 days
- savings of $5.6 million in four years resulting from reductions in costs for overtime, materials and utilities
- customer service response time reduced by 44 percent
- lost time from on-the-job injuries reduced by 46 percent
- on time deliveries increased from 75 percent to 99 percent
- customer complaints reduced by 78 percent

The public sector in general, and the federal government in particular, have much to gain from implementing process improvement. Maintaining inefficient processes is a tremendous waste of increasingly scarce resources, including money, people, time and equipment. Process improvement, then, is relevant to every process in an organization, especially as the federal government becomes more accountable to the general public for resource utilization. As a manager at the Federal Quality Institute in Arlington, Virginia, states:

> The federal government is turning to (process improvement) because it is too important to be championed only by private sector leaders. The federal government is the nation's biggest employer and its biggest customer. With three million civilian and two million military employees, it is bigger than the first seventeen of the Fortune 500 companies combined. It spends more than

$1.3 trillion every year. The public demands quality service from government; government must demand the same from its suppliers. (Wood, 1992, p. 258)

As one of the major components of the federal government, the DoD has much to gain from the efficiencies that process improvement can effect. Organizations within DoD which have implemented process improvement have achieved gains as dramatic as those realized in the private sector. The 14,000 employees of the Aeronautical Systems Division (ASD) of the Air Force Systems Command at Wright-Patterson Air Force Base in Dayton, Ohio, have realized the following results (Wood, 1992, p. 257):

- The Maverick Missile Directorate streamlined the contract process, closing out more than 33 contract actions valued at $219 million in just 90 days—the amount of time usually spent to administer only one change.

- Employees from the 495th Test Wing reduced the aircraft wash cycle by 75 percent, providing 210 additional days of aircraft availability.

- The Discrimination Complaints Office reduced its processing time for a formal complaint from 174 to 53 days, the lowest in the Air Force Systems Command.

Activities within the Department of the Navy using process improvement have been equally as successful. Some examples:

- The Naval Air Systems Command (NAVAIR), the first recipient of the President's Award for Quality, streamlined its acquisition processes, saving $1.8 billion in fiscal year 1988. Included in this were reductions in the average cost of restoring a naval aircraft to readiness for service of more than 24 percent and reductions in aircraft defects of more than 50 percent. (Federal Quality Institute, 1991, p. 27)

- The Naval Aviation Depot at Cherry Point in North Carolina competes with private maintenance facilities for its workload and revenue. It has realized significant and measurable savings since process improvement was implemented in 1986. One significant reduction was in the total cost to repair an engine by $22,000 per engine. Another $12 million was saved by

implementing process improvements suggested by employees. (Federal Quality Institute, 1991, p. 28)

- The Naval Aviation Depot at Norfolk, Virginia, reduced the cost of F-14 overhaul by 44 percent, from $1.6 million per plane to $1.0 million per plane. It reduced the average turnaround time from 202 to 194 days and the number of work shifts from three to one. Additionally, customer-reported defects decreased by about two-thirds. (Total Quality Leadership Office, May 1992, p. 6)

- A team of nine employees from the Naval Aviation Depot Operations Center at Patuxent River, Maryland, received the 1992 Quality Cup from *USA Today* and the Rochester Institute of Technology. The team won in the government category for revamping and automating the travel process. One result was that the time it took to receive reimbursement dropped from 46 days to three. (Total Quality Leadership Office, September 1992, p. 13)

As seen from the above examples, processes are everywhere in an organization, and include both production-type and white-collar work. The reason that process improvement can potentially result in such tremendous gains is that it helps to ensure that only value-added activities constitute a process. Process improvement has as its goal the removal of non-value added activities. Additionally, it facilitates monitoring the process to maintain the opportunities for refinement.

The potential for improvement in organizations can be surprisingly large. One study concluded that, typically, "...one-third to two-thirds of work process tasks do not add any value to products or services sought by customers" (Sibben, 1992, p. 17). Another study found that:

> ...50-80 percent of the activity in a typical business process is non-value added. Usually, at least 50 percent of the non-value added activity can be quickly eliminated or significantly streamlined. This leads to order of magnitude improvement in process cycle time, cost and quality. (Cyr, 1992, pp. 24-29)

This means that the majority of a worker's time may be spent in activities which add nothing to the organization's final output. As Cyr states, if only half of these activities are identified and removed from the work processes, the results are dramatic and far-reaching.

Inefficient processes can mean poor quality outputs which may result in customer dissatisfaction (Walker, 1992). It has been found that up to "...95 percent of all defects (in outputs) are caused by dysfunctional work systems (and) processes" (Walker, 1992, p. 474). Improving processes, then, has tremendous potential for improving the quality of the output, which should, in turn, increase customer satisfaction.

Additionally, reducing process time and streamlining the process has been shown to increase worker productivity. This can be especially true in white collar work. One productivity analysis showed that:

> White-collar people generally are only 40-60 percent productive. The maximum possible improvement is probably some 20 percent; but a 5 percent increase...would have a major impact on an organization. The worker is not the problem. The average individual is quite willing to do a day's work for a day's pay. Office productivity is a process issue: to manage the excess capacity we already have. (Greenwood and Greenwood, 1984, p. 38)

The study demonstrated that improvement programs in the area of white collar work can pay big dividends. A survey from that time showed organizations realized an "average productivity gain of 9.5 percent" (Greenwood and Greenwood, 1984, p. 38).

In addition to gains in productivity, customer satisfaction, output quality and cost savings, process improvement can also mean improved employee morale (Ferguson, 1990). Alan D. Swain, a senior scientist at Argonne National Laboratory and a

process improvement consultant in New Mexico, points out that management is traditionally perceived as seeking to blame employees for deviations in output quality (Hoffer, 1988). But Swain categorizes workplace errors as either "situation caused" or "human caused" and has found that only 15 percent of errors on the job are human caused (Hoffer, 1988, p. 62). He states that when management undertakes process improvement, the employee will see management focusing on the processes and soliciting workers' experience and knowledge for improvement, and not focusing on the employee to assign blame (Hoffer, 1988).

As processes become less cumbersome and more streamlined, on-the-job injuries are also reduced and safety records improve. This could be partially due to reduction in employee fatigue, but a major factor has been found to be that employees learn how to "work smarter" in every aspect of their work. (Kirkham, 1991)

All of this means that functional managers will learn to see the management process as a whole and the organization in an entirely different manner. As a consultant in human resources states, "If your goal is to perfect your processes, there is no such thing as something that 'ain't broke'" (Walker, 1992, p. 473). It also means that functional managers will begin to understand that non-value added tasks such as re-entering, redoing and reinspecting are not needed if work is done right the first time, which could mean savings to the organization of up to 25 percent (Wood, 1992). After all, "quality is free—nonconformance is what increases cost" (Walker, 1992, p. 473).

C. SUMMARY

The CIM initiative has helped the DoD identify the requirement for process improvement prior to automation, a concept which is relevant for every process which produces an output. Processes occur throughout every DoD organization, and process improvements can mean significant gains on many levels. These potential gains may include improvements in an organization's productivity, output quality, safety record, customer satisfaction, process time, employee morale and cost savings. All of this is crucial to the functional manager during the current period of increasingly austere DoD budget constraints.

In addition, process improvement means the functional manager may gain a new understanding of the organization, the processes and employees supervised, as well as how effective management of process improvement will impact the organization. The functional manager, as process owner and the marshaler of resources, plays a pivotal role in the process improvement process. Chapter II discusses this in role in greater detail.

II. PROCESS IMPROVEMENT AND THE FUNCTIONAL MANAGER

As discussed in Chapter I, DoD functional managers play a pivotal role in the implementation of the process improvement process within their organizations. This is especially true in the area of resource identification and acquisition. The functional manager must have a thorough understanding of the organization to allow for a survey of requirements prior to marshaling resources. Understanding requirements helps ensure an organized and systematic approach to process improvement which minimizes confusion and allows for a coherent, unified plan of execution. It also enhances the opportunity of successful implementation of process improvement and increases the probability that continuous improvement will occur. (Benson, 1992)

This chapter addresses the functional manager's relationship with the process improvement process and the organization, and how that relationship impacts the marshaling and acquisition of resources.

A. FUNCTIONAL MANAGER COMMITMENT

Chapter I stated that a significant amount of workers' time may be spent on activities which add no value to the process or the output. Sibben (1992) has shown that 85 to 90 percent of these activities may have been put into place by management. Further, Dr. Joseph Juran, a pioneer in the field of management systems improvement, has argued since the early 1950s that 85 percent of the process

failures in any organization are the fault of systems controlled by management (Joiner, 1985). This means that functional managers have tremendous opportunities for improvements in the areas directly under their purview.

Although the commitment of everyone within the organization to process improvement is crucial to its successful implementation and continuation, organizational commitment begins with the functional manager. This commitment must encompass providing appropriate and sufficient resources to workers and management. Not providing appropriate resources may inhibit worker acceptance and successful implementation. One article on process management states:

> ...executive and middle management must understand and support the implementation (of process improvement) and be willing to provide the necessary resources. Employees only can do so much to affect the social and technical systems in which they work. Management must facilitate the cultural and operational changes required for effective implementation. Involvement comes with the realization that process management is the only way to make the kinds of improvements needed to...ensure quality products and services now and in the future. (Reid, 1992, p. 44)

The effective utilization of resources for implementation of process improvement by those within the organization relies in great measure upon the degree of commitment shown by management. Michael Hammer states:

> No one in an organization wants reengineering. It is confusing and disruptive and affects everything people have grown accustomed to. Only if managers back the effort and outlast the company cynics will people take reengineering seriously....Commitment, consistency—maybe even a touch of fanaticism—are needed to enlist those who would prefer the status quo. (Hammer, 1990, p. 112)

This commitment from management must be "sincere and devoted" if everyone throughout the organization is expected to participate in process improvement

productively (Benson, 1992, pp. 28-30). Even the way resources are marshaled and allocated can send a message of commitment, and, in so doing, determine ultimate success or failure. One management consultant succinctly points out:

> ...management must be totally committed and continually seen to be so. That they are secretly not, or that they are only half committed, cannot be disguised from the organization, whatever their public pronouncements. Lack of commitment is transmitted via the organizational grapevine from their private comments, or from the priorities they reveal in the decisions they make and their deployments of resources. Our experience is that the organization will be solidly behind what management really wants and supports, not what they say they want! (Doran, 1986, p. 61)

Management behavior and actions have been identified as an integral lever for change. Unless managers not only espouse the principles of leadership through quality but practice them day-in and day-out—"walking like they talk"—then the improvement effort is essentially doomed to failure and all resources consumed, wasted (Upton, 1987).

B. HAVING A VISION FOR IMPROVEMENT

The commitment of the functional manager to the process improvement process is imperative to the acquisition and marshaling of appropriate resources, but this commitment must be tied to a vision of what the organization hopes to become and how process improvement relates to that vision. It is up to the functional manager to maintain the "compelling vision" which will convey to members of the organization why the process improvement process is being undertaken and how life will be better because of it (Melum, 1990). Without this vision, the scarce resources obligated to the improvement effort may be wasted.

By having a vision and articulating where the organization hopes to go with process improvement, the functional manager will also facilitate ownership of, and responsibility for, the processes within the organization. This sense of ownership should prevent the "cookie cutter" approach to process improvement. Recognizing the uniqueness of the organization and tailoring resources accordingly will increase the chance of process improvement success. (Johnstone, 1992)

Ownership of processes will also help to create an understanding of which processes are most critical to the organization. This can ensure that limited resources are "focused on those activities and processes that will generate the biggest benefits for improvement efforts" (Miller, 1992, p. 33). A real understanding of the "hierarchy" of organizational processes is required for resources to be appropriately acquired, thus improving the likelihood of success. An illustration of what is meant by the term "hierarchy of processes" is presented in Figure 1.

Maintaining a vision of what process improvement is and what it can do for the organization also means that the functional manager must direct resources at improving processes, not just at creating enthusiasm for a new program. A vision, then, is commitment to a purpose, going far deeper than cajoling workers into a fresh way of doing business. (Walker, 1992) Not realizing this at the offset can have long term effects:

> Some efforts stress exhortations to quality improvement with banners and slogans and all kinds of motivational hype, but do not dedicate sufficient resources to programs that actually would foster improvement. The brass band and arm band approach lacks substance; it does not try to educate, as well as inspire, people to understand the business and manufacturing processes. Although this technique boosts motivation in the short run, in the long run little

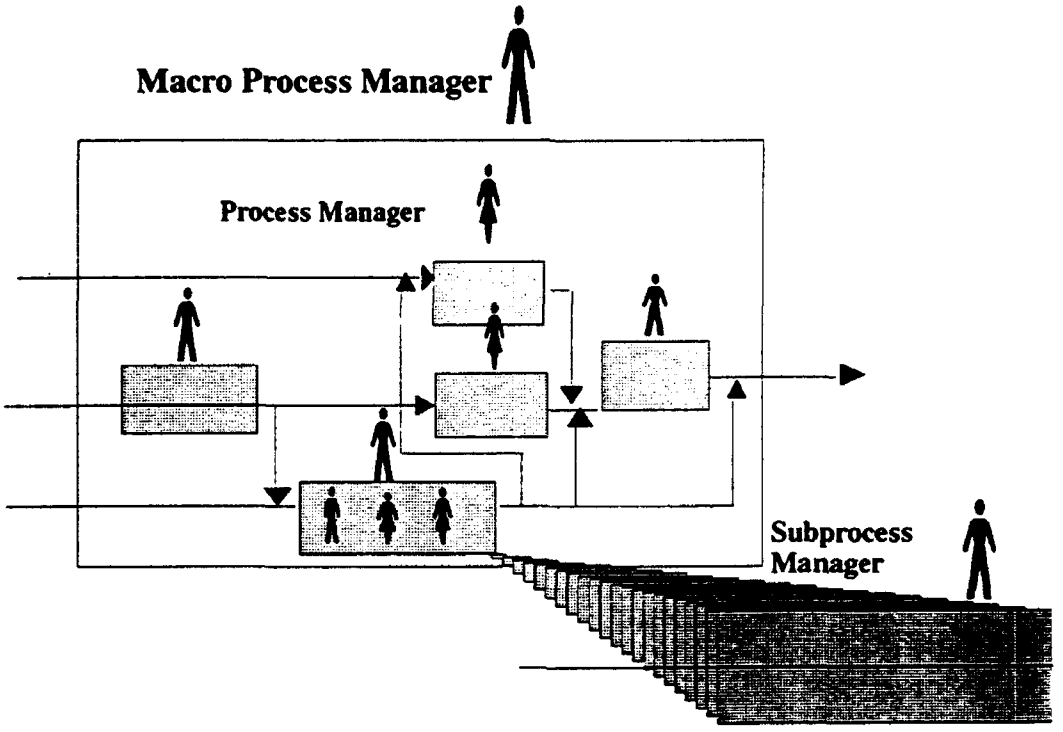

Figure 1. The Hierarchy of Processes

is improved, and publicity efforts soon are abandoned—not without leaving a wake of cynicism that reduces the credibility of future efforts. (Walker, 1992, p. 474)

C. THE FUNCTIONAL MANAGER AND CONTINUOUS IMPROVEMENT

Having a long-term view of the organization will also increase the likelihood of maintaining the process improvement process. Maintaining the process improvement process means a long-term commitment of resources, something the functional manager must keep in mind when marshaling them. For example, Walker (1992) has

shown that companies which have a process improvement program spend significantly more in on-going training and education for employees than their industry's average.

Additionally, acquiring the appropriate resources means that employees will be able to fully participate in the process improvement process. It is only by "empowering and enabling workers to participate in the ongoing monitoring of quality and by perfecting the process can continuous and lasting improvements" occur (Walker, 1992, p. 475).

D. SUMMARY

The functional manager is crucial to the success of the process improvement effort in their organization. Without the functional manager's commitment, vision and long-term view, it is unlikely that resources will be identified and marshaled efficiently and effectively. Even worse, if the functional manager does not understand which processes are the most crucial to the organization, or that process improvement is a continuous process, scarce resources could be wasted on processes which have no impact on the organization or its effectiveness. This could spell disaster for future process improvement efforts.

When resources are marshaled with all of the above in mind, employees, who have been given the right tools for the process improvement process, can make it an ongoing part of daily operations. The functional manager, then, is an essential element of a successful process improvement effort.

III. DEFINING THE PROCESS IMPROVEMENT PROCESS

A thorough understanding of what the phrase "process improvement process" encompasses is crucial to the functional manager in determining what resources are required for improvement efforts. This understanding is also crucial to marshaling needed resources once the requirements are established. This chapter discusses the meaning and significance of the phrases "process," "improvement" and "process improvement process" in the context of marshaling resources for the successful implementation of a process improvement venture.

A. "PROCESS" DEFINED

A process is an activity, or series of activities, which occurs over time and transforms inputs—such as information, raw materials and paperwork—into recognizable outputs, such as products and services (D. Appleton Company, Inc., 1992). A process is also:

> ...a set of causes and conditions that repeatedly come together to transform inputs into outcomes. The inputs may include people, methods, material, equipment, environment and information. There can be several stages to the process, or each stage can be viewed as a process. (Moen and Nolan, 1987, p. 64)

Another way of looking at a process is as "a series of activities that takes an output, adds value to it, and produces an output; or, the application of skills adding value to an input" (Harrington, 1987, p. 137).

As Dr. H. J. Harrington, the Chairman of the Board pro-tem of the American Society for Quality Control and the Project Manager for Quality Assurance at IBM, points out, defining processes may be simple, but identifying them frequently is not. The following example from IBM illustrates this point:

> Just taking a customer order and moving it through the plant and distributing these requirements out to the manufacturing floor—that activity alone has 31 (processes) to it. Accounts receivable has over 20 process steps. Information processing is a whole discipline in itself with many challenging processes integrated into a single total activity. (Harrington, 1987, p. 137)

As the above example also illustrates, processes—even those that appear to be uncomplicated—usually cross the functional boundaries of an organization. Geary Rummler, a principal of the Rummler Group, a process improvement consulting firm and author of a book on process improvement entitled *Managing the White Space,* finds this crossing of functional boundaries an essential concept for managers to understand. He states:

> Ask managers to draw a picture of their companies...what (the picture) will show is the fact that each department or business unit has its own management hierarchy...it doesn't show the products or services we provide. It leaves out the customers we serve. And it gives us no sense of the work processes through which we develop, produce and deliver our products. In short, the familiar organization chart doesn't show what we do, for whom we do it or how the processes work. Other than that, it's a great picture of an organization. (Rummler and Brache, 1991, p. 56)

The functional manager, then, will more than likely be required to marshal resources for more than one section of the organization, no matter how seemingly uncomplicated the organization's process may appear on the surface. Keeping this broad scope in mind, even if the initial intention is to undertake a modest process improvement effort, will ensure sufficient resources are acquired.

As the above discussion indicates, all work is a process and all organizations have processes. The challenge is to identify the processes at an appropriate level and gain sufficient understanding of them to undertake process improvement. (Loubert, 1988) This is one of the primary uses of the resources the functional manager will marshal for the process improvement process, and is crucial to successful implementation of process improvement. Understanding the process:

> ...is the only way to achieve a level of quality output that makes the process and the people involved in the process a success. If one part of the process goes out of control, all parts before and after the derelict process may go out of control....It's easy to fix something that's broken if you know what caused it to break, but many times you aren't sure what is broken. The problem can be small or cumulative and people start changing different parts of the process to correct an "error"—in a process parameter that was perfectly fine...Without a fundamental understanding of the *entire process*, you can never be sure of the impact a change in one part of the process will have on subsequent processes applied to the product. Without a complete understanding of the process, it will take you much longer to identify which process is out of control so you "don't fix what isn't broken." (Werner, 1993, pp. 9-10)

Understanding that there "is no product without a process nor a process without a product" is essential to marshaling appropriate resources for the process improvement process (Perigord, 1990, p. 204). Processes are the core of the organization. If processes are overlooked, then poor quality outputs and customer dissatisfaction may be the result, with the opportunity for timely action long passed. As one manager of a process improvement effort succinctly states, "Focusing on anything but our processes means we will find our problems too late" (Reid, 1992, p. 44).

B. "IMPROVEMENT" DEFINED

The goal of process improvement is to *improve* the process, not to *fix* the process. *Improvement* of a process requires a long term commitment by management and a cohesive, comprehensive plan for implementation, attainment and continuation. *Fixing* a process, on the other hand, connotes a one time adjustment which will quickly return the process to "business as usual." (Kirkham, 1991) The long term commitment which process *improvement* requires must be taken into consideration by the functional manager when identifying requirements for resources, as well as when marshaling them.

The goal of process improvement is to remove all non-value added activities from the process, making it healthy and competitive, thus optimizing the efforts of everyone involved. The relationship between the process as designed and the functional manager is represented in Figure 1. The process as it may really be and its relationship to the functional manager is represented in Figure 2. It can be seen from these illustrations that the quality of the process can directly and substantially impact the functional manager. Improving the functioning of the process, then, can also mean improving the functional manager's functions.

The functional manager may wish to think of improving a process in terms of the benchmarks recommended by Leigh Reid, the manager of the implementation of the Integrated Process Management Methodology, Statistical Process Control, Benchmarking and Quality Function Deployment at LTV Aerospace and Defense

Figure 1. The Process as Designed

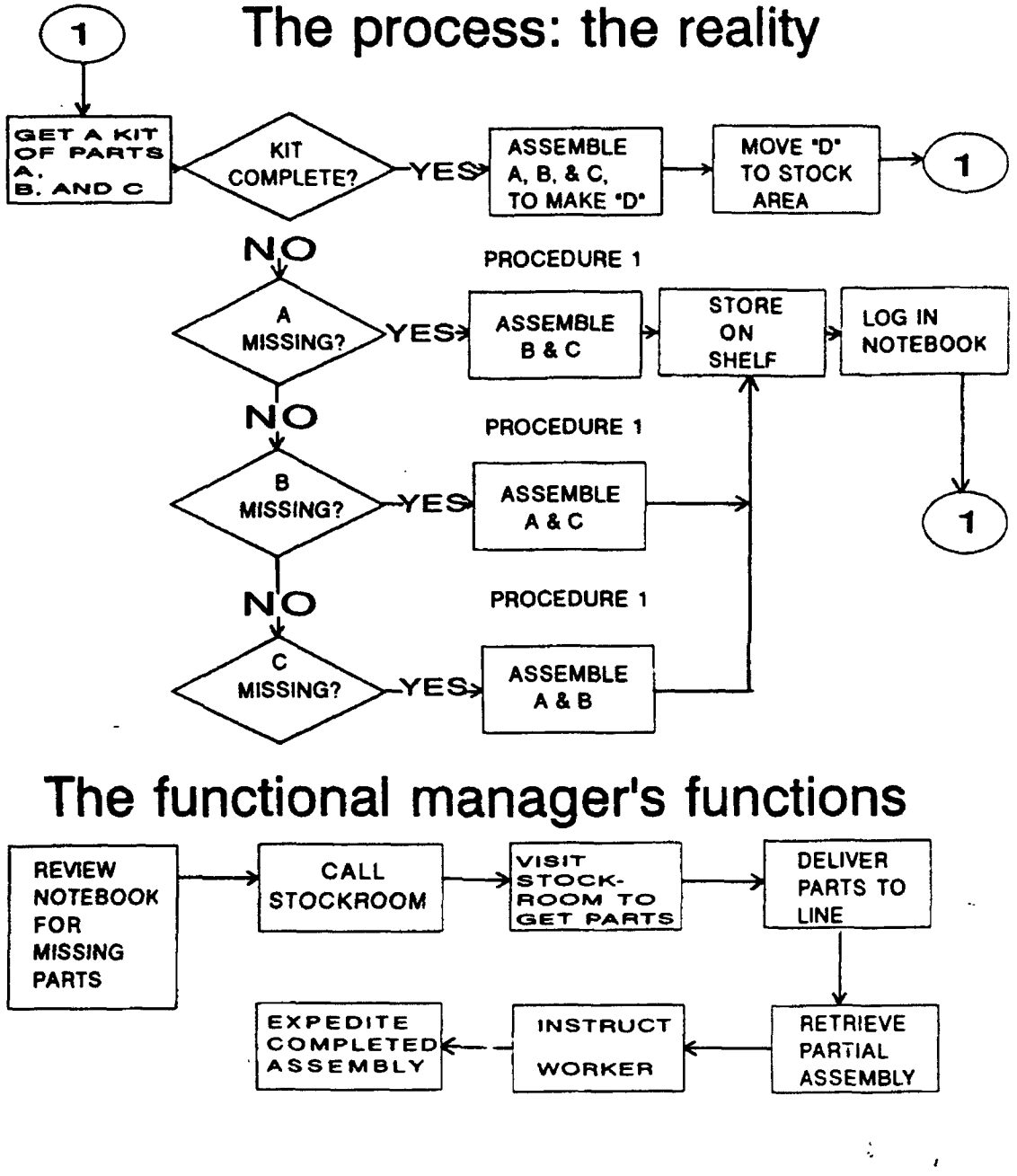

Figure 2. The Process: The Reality

Company. She defines process improvement as achieving a process which is "good." A "good" process is one which is *defined*, *controlled*, *effective*, *efficient* and *adaptable*. (Reid, 1992, p.38) Viewing improvement within these parameters—discussed in greater detail below—may help the functional manager develop a framework for determining resource requirements in both the long and short term.

1. The *Defined* Process

A *defined* process is one in which the inputs, outputs and activities are thoroughly understood and documented by everyone involved in the process. It requires that the organization's customers' output needs are thoroughly understood and that input requirements are communicated to, and understood by, suppliers.

2. The *Controlled* Process

A *controlled* process is very different from one which is *in control*. A basic concept of process improvement is that improvement is an on-going and dynamic mechanism, and not a temporary condition requiring a one-time action. Therefore, a process can never be totally *in control*. However, a process is *controlled* when it can be measured in a manner which allows for continuous monitoring and evaluation.

3. The *Effective* Process

A process is *effective* if the customer's requirements are met and if it does that for which it was originally designed. After all, as one industrial manager observes, "Generally speaking, processes don't start out as cumbersome and bureaucratic. They get that way over a period of years, as we attempt to mend immediate problems, bandaging symptoms in an attempt to get work done" (Benson,

1992, p. 29). Only by peeling back the layers of bandages may a functional manager make a process effective once again.

4. The *Efficient* Process

A process is *efficient* if it uses the minimum amount of the organization's resources to convert inputs into outputs which meet customers' requirements. At this point, the process is producing the best output possible at the lowest achievable cost. Note that the process is not being done as cheaply as possible; rather, the process is producing what the customer needs at the lowest possible cost to meet that need.

5. The *Adaptable* Process

A process is *adaptable* if it can readily meet changing customer needs. An adaptable process is one which will survive in the long-term, and implies continuous monitoring of not only the process, but of customer requirements as well.

C. "PROCESS IMPROVEMENT PROCESS" (PIP) DEFINED

The process improvement process may be defined as, "...the practice of continually working with the cumulative steps involved (in business processes) to make (those) processes more efficient, more productive, more cost-effective, and easier to use, while making what is produced of consistently higher quality" (Benson, 1992, pp. 28-30). What is important for the functional manager to understand and remember is that *process improvement is a process*. This means that PIP requires continual monitoring and the long-term commitment of the organization's management and resources. It also means that PIP is a permanent, driving force in

the organization. (Hyde, 1992; Melum, 1990) All resource planning and acquisition must be accomplished with that in mind.

Viewing process improvement as a process ties other key organizational elements into resource identification and acquisition. As a permanent, driving force, PIP must be tied to the organization's overall strategic vision and mission as it crosses functional boundaries; outputs must be evaluated by the requirements of internal and external customers. In short, PIP does not happen in a vacuum; what the functional manager accomplishes in one area will undoubtedly affect another. (Upton, 1987)

Accordingly, resources for the implementation of PIP must be marshaled in an organized, systematic manner so that everyone involved speaks the same language, uses the same tools and hears the same message. Otherwise, the functional manager runs the risk of losing worker effectiveness and efficiency due to too much noise. (Johnston and Daniel, 1992)

D. SUMMARY

PIP is the recognition that workers cannot perform better than the processes they work with, and that the organization is only as good as its weakest process (Milakovich, 1990). Viewing PIP as a system critical to the organization as a whole should help the functional manager form a strategic, cohesive plan for marshaling and acquiring resources for the process improvement effort.

IV. IDENTIFYING CUSTOMERS AND SUPPLIERS

Just as the process drives PIP, customers and suppliers drive the process. It is the customer, after all, who will use the outputs produced and who will ultimately determine quality and suitability. The supplier is equally important. Without an input, there can be no process and no output. It is the customers and suppliers, then, who establish the requirements that the functional manager must meet when designing a process improvement effort. These requirements must be a part of marshaling and acquiring resources for PIP. This chapter discusses issues which may need to be considered when identifying customers and suppliers. It also discusses how customers and suppliers set the requirements which functional managers must meet and how these requirements will affect the resource marshaling effort.

A. CUSTOMERS, SUPPLIERS AND PIP

As discussed in Chapter III, viewing process improvement as a process draws many key organizational elements into resource identification and acquisition, and PIP implementation. Customers and suppliers are two of these key elements. Having a unified vision of who customers and suppliers are implies that the functional manager can, in the words of one process redesign expert, "apply resources critically and not slavishly" (Walker, 1992, p. 474).

In Chapter I the point was made that improving the process will usually result in improved output quality, which should result in increased customer satisfaction.

A major study of process improvement in the banking industry found that when management supplied employees with appropriate resources—such as systems, equipment, training and ongoing PIP support—customers perceived higher quality service and output production (Lee, 1991). This supports the notion that external customer perceptions are directly related to the "efficacy of the customer-supplier links forged behind front-line employees" (Lee, 1991, p. 23).

As discussed in Chapter III, processes usually cross functional boundaries. An output from one division within an organization will likely become an input for another. The concept of one division or one individual being both a customer and a supplier is illustrated by Figure 1. In that way, whatever their job, every worker becomes "a link in a chain of internal customers and suppliers that leads, eventually, to your organization's external customer" (Lee, 1991, p. 25). It also means that if PIP is designed and resources are acquired in that manner, satisfying the internal customer and supplier will also mean satisfying the external customer. Marshaling the appropriate resources for the process will ultimately increase the functional manager's odds of success. (Johnstone, 1992)

Within this context, then, it is important to remember that *the functional manager is not a customer of PIP, but a key supplier.* It is the functional manager who brings resources to, and marshals resources for, PIP, making the manager an integral part of the process of process improvement. As a key supplier, the functional manager must have a thorough understanding of who sets the requirements for the process. (Boyett, Kearney and Conn, 1992)

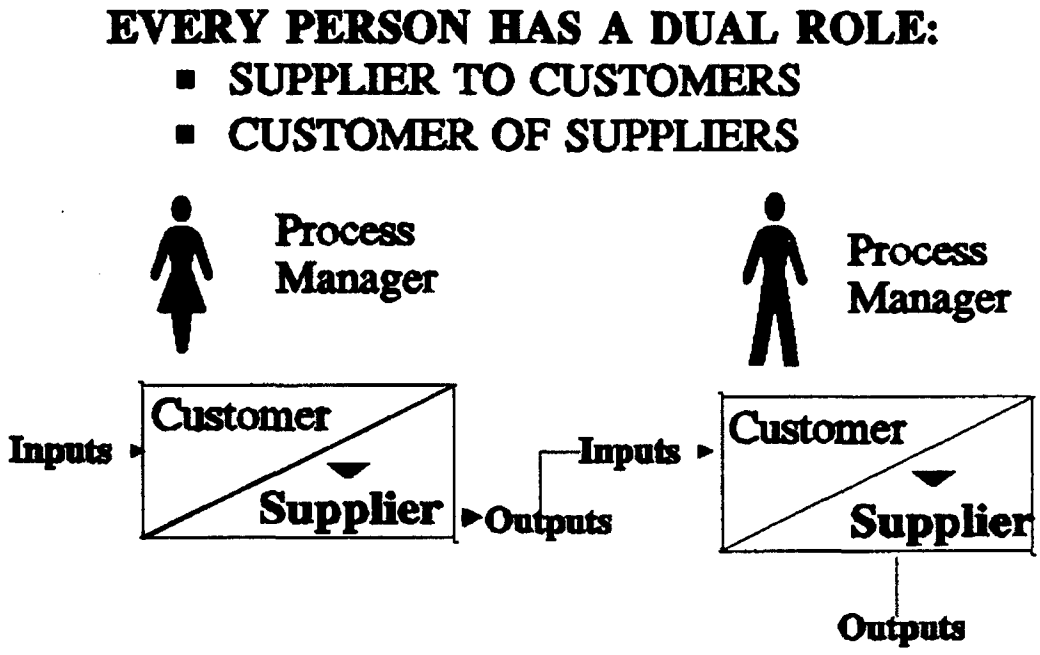

Figure 1. The Customer/Supplier Relationship Within an Organization

B. CUSTOMER AND SUPPLIER *REQUIREMENTS* VERSUS *SATISFACTION*

The functional manager must be aware that there is a significant difference between customer and supplier *requirements* and customer and supplier *satisfaction*. Simply asking if the customer or supplier is satisfied with your output will not reveal the information required to gather the resources for undertaking process improvement.

For example, one hospital chose the surgery ward discharge process as their first quality improvement target. The hospital began by surveying patients upon release from the ward. The hospital was pleased to find that patients were, on the whole, satisfied with the releasing process. However, a study unrelated to the process

improvement effort, undertaken by a group of surgeons, found that the same patients reported higher than expected levels of postoperative pain. A closer examination found that no one told the patients that pain medications taken at home were inherently weaker than those given intravenously in the hospital. After this information was routinely given as part of the discharge process, patient anxiety and comments on post-discharge pain fell dramatically. (Koska, 1992)

This illustrates the care that must be taken when the functional manager begins to marshal resources. A thorough understanding of customer and supplier requirements is essential. Meeting those requirements will help ensure satisfaction.

C. IDENTIFYING CUSTOMERS

It may be difficult for members of the DoD to recognize that every output of every process within the DoD has a customer. One author of several articles and books about quality improvement programs within the public sector argues that the customer for all public agencies is the taxpaying public (Swiss, 1992). Since it is difficult to survey and communicate with such a large number of "competing clienteles," the author argues that DoD customer requirements can never be satisfactorily identified. (Swiss, 1992, p. 358) But, as the director of publications at the Federal Quality Institute in Arlington, Virginia, points out:

> In government, we are getting used to the idea that a customer is not just someone buying a car or a compact disk. Our taxpaying customers buy national parks and national defense. But even more, a customer is anyone in or out of our organization who uses the work we produce. Our internal customers may be field staff who need instructions or an agency administrator who needs a budget analysis. (Wood, 1992, p. 257)

This view of who the customer is for outputs of processes within the DoD is most appropriate and relevant to the functional manager. While the taxpayer is inarguably the source of capital for all organizations within DoD and is the ultimate consumer of national defense, this discussion defines a "customer" as one who directly uses the output of a DoD division or organization.

1. The Customer and the Functional Manager

For the functional manager, it is imperative to understand that the process and the customer are inexorably linked. Knowing who the customers are and what is important to them will create a framework for the process improvement effort. This will, in turn, facilitate the identification and acquisition of resources for PIP implementation. (Chang, 1993) Walker (1992) and others (Lee, 1991; Boyett, Kearney and Conn, 1992; Koska, 1992; Wood, 1992; Chang, 1993; Werner, 1993) argue that a successful PIP effort relies almost totally on an intense, unrelenting understanding of what the customer needs. In other words, the manager must integrate the "voice of the customer" with the "voice of the process" to truly improve work processes (Koska, 1992, p. 50).

It is also important for the functional manager to understand that everyone involved in the process is ultimately serving the external customer. After all, if workers are not serving the external customer directly, they are servicing someone who is. This systems view may also make the carrying out of PIP easier for the functional manager. As the managing editor of *Training* magazine points out:

> Whether internal or external, the quality improvement process involves learning your customers' expectations and meeting them. If you concentrate

> solely on the external customer you tend to heap responsibility—and blame—for customer satisfaction on your front-line people; everybody else just coasts along. By expanding the definition of "customer," you involve every employee—even those who never lay eyes on an external customer—in your improvement efforts. The idea that everyone has a customer provides a framework for improvement. Without that focus you can end up just doing a lot of wheel spinning. (Lee, 1991, p.23)

2. The Internal Customer

It is tempting to consider the internal customer as less important than the external customer when undertaking PIP. However, just as the internal customer will ultimately affect the output that the external customer receives, the internal customer will be most impacted by the functional manager's changes to the process. In turn, the functional manager will be most impacted by the internal customer's understanding of the process and of what the manager is attempting to accomplish with PIP.

The functional manager must keep the requirements of the internal customers in mind when gathering resources for process improvement. After all, the workers involved in the process are the customers of the functional manager's resource gathering efforts. They are the ones who will ultimately use the manager's tools, training and equipment. (Hyde, 1992) As such, the functional manager should have as much of an understanding of the internal customer's needs when implementing PIP as of the external customer's needs. One author best sums up this philosophy with his "golden rule," which is, "Do unto your internal customers as you would have them do unto your external customers" (Lee, 1991, p.25).

3. The External Customer

While the internal customer may recognize PIP as a series of processes, the external customer most likely sees the functional manager's outputs as the result of a single process. The external customer would probably prefer that internal steps in the process remain invisible. (Doran, 1986) This is important for functional managers to understand, since process improvement frequently fails when management becomes so far removed from the external customer that they cannot appreciate how customers see the organization, and so lose the ability to relate to them (Boyett, Kearney and Conn, 1992).

In gathering resources for the process improvement effort, the functional manager must also be able to differentiate *stakeholders* from customers. Customers use the outputs the organization produces. They are the ones who will be satisfied or dissatisfied with the output's ability to meet their requirements. As previously discussed, meeting or exceeding these requirements is a crucial aspect of PIP.

Stakeholders, on the other hand, have an interest in the functional manager's organization and may set the parameters and/or influence the environment within which the organization operates. The chain-of-command hierarchy, other organizations in the area and internal upper management are examples of stakeholders. But, unless they use the outputs produced they are not customers, even though, in a broad sense, stakeholders are customers of the organization's successes and failures. However, when marshaling resources for process improvement the

functional manager should focus on the requirements of the actual output users. Satisfying the organization's customers should satisfy the organization's stakeholders. (Geber, 1990)

D. IDENTIFYING SUPPLIERS

Suppliers are just as crucial to setting requirements for processes as are customers. Although external suppliers in DoD organizations are frequently mandated to functional managers by the federal government, or through contracting processes outside of the direct control of the organization, communicating expectations and standards are necessary to the application of any process improvement endeavor. After all, the process and its outputs rely heavily on the quality of the inputs. If the functional manager wishes to assemble resources for PIP, then the requirements of suppliers are paramount.

1. The Supplier and the Functional Manager

Just as the organization has internal and external customers, it has internal and external suppliers. A professor of operations management at Northwestern University states that, from a systems point of view:

> ...there is little difference between someone's supplier and customer. In the same way that satisfied customers are important in the long term, loyal suppliers also are important, and pleasing the supplier is also an end in itself. Very good suppliers are a very scarce resource, and an enlightened customer really needs to be proactive. Everyone is looking for world-class suppliers, but the customer also has obligations to come up to world-class standards. (Yovovich, 1991, p. 29)

This may mean that the functional manager and those involved throughout the process—not just those working in purchasing or accounting, or internal

customers of internal suppliers—may have to communicate with suppliers. Only in this way may the functional manager insure that there is sufficient information to begin PIP.

2. The Internal Supplier

Internal suppliers may perceive that the quality of their work has very little impact on any other part of the organization. The functional manager should realize that most workers who do not routinely deal with external customers generally see their jobs as "a series of tasks that have very little to do with the process" of producing an input for other's output (Geber, 1990, p. 32).

Before gathering resources for process improvement, the functional manager must ensure that the relationship of internal suppliers to the process is understood. The point must be made that the functional manager is not looking for a scapegoat to blame for poor inputs. The point is to find out what the relationships are within the process so that resources can be better aimed at improving it. (Lee, 1991)

3. The External Supplier

When the quality of the organization's processes depends directly on external suppliers, forming a partnership with the supplier may become a necessary element of PIP (Ash, 1992; Yovovich, 1991). Very often, the external supplier is invisible to the functional manager and those involved in the process. This may mean that "reverse research" has to be done to identify suppliers and to start a dialogue for process improvement.

The supplier may become a valuable resource for the functional manager's process improvement venture; for example, one private organization found that:

> ...a supplier was kind enough to reveal a customer who was much better at purchasing a certain kind of hardware than we were. We picked up a lot of good benchmarking information and were able to go and figure out how we could emulate that other company....This yielded valuable tips for improving our purchase-process improvement (Yovovich, 1991, p. 29).

E. SUMMARY

The identification of customers and suppliers gives the functional manager a valuable opportunity for gaining insight into processes chosen for improvement. The unique view that external customers and suppliers have of the organization can be, in and of itself, a valuable resource. Additionally, designating everyone in the organization's work force as either customer or supplier makes them feel a part of the process, and ultimately, the improvement effort. Without that designation, the functional manager may find that workers are split into two groups: activists and bystanders, making real improvement impossible. (Johnston and Daniel, 1992)

V. EMPLOYEES AS INTERNAL RESOURCES FOR PIP

The functional manager must identify and be aware of the internal resources available for the implementation of PIP prior to marshaling and acquiring additional resources. Internal resources are the resources which exist within the organization. The most important of these resources are the organization's employees. Other internal resources are discussed in later chapters.

This chapter discusses the organization's workers as the most valuable internal resource for PIP. It discusses the importance of identifying key personnel prior to implementation, and how a "skills survey" can provide a framework for the functional manager to marshal additional resources. The chapter also discusses how employees may perceive the PIP effort and how that perception may impact it, the functional manager and the acquisition effort.

A. EMPLOYEES, THE PROCESS AND PIP

The importance of an organization's employees to the process improvement effort cannot be underestimated. As stated in Chapter III, the functional manager is a crucial supplier to the organization's process improvement endeavor and to the employees involved in the process. The organization's workers are the ones who will use the resources supplied by the functional manager. The successful integration of these tools and resources with the work force will, in a large part, determine the success of PIP. (Reid, 1992)

1. The "Soft Issue"

Joseph G. Werner, a process improvement consultant, maintains that the most important challenge for companies in the coming years will be gaining a complete understanding of their processes. He has broken down the process of understanding the total process into three subprocesses. (Werner, 1993) These three subprocesses consist of (Werner, 1993, pp. 2-3):

- managers getting to know the process (the science, methods and measurement of the process)
- managers getting to know themselves (their goals, personal management style and learning how to manage change)
- managers getting to know the people involved in the process (their goals, skills and their role in the process)

Werner refers to the third subprocess, that of managers getting to know the people involved in a process, as the "soft issue," which is frequently overlooked by managers when implementing process improvement (1993, p. 57). The paradox to this for managers is that soft issues are typically where managers spend the majority of their time when the concept of process improvement is introduced into the organization. Therefore, he feels managers must gain a clear understanding of the impact soft issues will have on the process improvement effort. This is especially true when it comes to identifying existing skills in order to improve deficiencies and/or to take advantage of existing expertise.

2. Employees and Successful Process Improvement

Experts in the field of process improvement agree that without the participation of those actually involved in the processes, successful PIP cannot occur

(Melum, 1990; Werner, 1993; Galagan, 1992; Upton, 1987; Benson, 1992; Johnston and Daniel, 1992; Reid, 1992; Cyr, 1992; Rummler and Brache, 1991). Without the full participation of these invaluable resources, process weaknesses may take much longer to be identified than would otherwise be the case. Management's job, then, is to provide the resources to focus this expertise, as the following quotation illustrates:

> ...(many organizations are) discovering that it is the employees who are intimately involved in the business process on a day-to-day basis that are in the best position to improve it....The people who really know what we need to do to eliminate waste and improve customer service are the people doing the job every day. They're the real experts. All that's needed is a structured way to focus their ideas, and for management to listen to what they have to say. (Cyr, 1992, pp. 22-24)

In focusing employee ideas, functional managers may learn much about those processes which have become layered with non-value added activities:

> ...the employees who work within the processes every day understand the problems more intimately than anyone else. They are the ones, after all, who jump through often ridiculous hoops to get their jobs done. And usually, they're the only ones who remember why the hoops were invented in the first place. (Benson, 1992, pp. 28-30)

This can be especially true in DoD organizations where turnover among management is typically much greater than that experienced in the private sector (Swiss, 1992). This means that "corporate memory" may rest with employees who have been on the job for several years. The following example illustrates this point:

> In one company, the accounting department spent some 20 manhours every month producing additional end-of-the-month summaries for a vice president who then passed the reports on to six others. But the other six officers regularly deposited these "important documents" in the trash can. Only when employees began to examine the process was it discovered that the vice president who

originally requested the reports had left the firm five years earlier. (Benson, 1992, pp. 28-30)

The intimate knowledge of the process that workers have is a key resource for the functional manager. The functional manager may find that "the most significant and lasting benefits are derived from the insights and commitment of the people who ultimately will make the improvements and work within the process" (Rummler and Brache, 1991, p. 61).

B. THE FUNCTIONAL MANAGER, HUMAN RESOURCES AND PIP

The functional manager, then, can use human resources to tailor their process improvement resource acquisition to the specific needs of the organization. Moreover, the ability of management to maximize this resource may require specific resource appropriation, which will require the type of understanding Werner espouses. This is not just a management tool but a management obligation. As one manager points out, "With mobile technology and capital, employees are an organization's major source of competitive advantage. Enhancing employees' abilities, and their willingness to use those abilities, is a key management responsibility" (Johnston and Daniel, 1992, pp. 15-19).

1. Process Workers as Process Managers

Identifying existing skills will facilitate the allocation of resources. The functional manager should find that:

> It's not enough to tell people they should improve. They already know that. What they need to know is *how* to improve. They need the tools to do the job...and...(management) must be willing to provide the necessary resources. (Reid, 1992, p. 44)

To do this, functional managers may need to see the workers involved in the process in a new light, perhaps even as managers themselves:

> ...if all work is a process, then every employee is a process manager. They make decisions all the time while they are doing their jobs, and they perform the actions required to complete the job and produce a product or service. They are actually managing the processes they perform. Of course, it's not as simple as just calling your employees process managers—they are not instantly transformed with this new title. They need some help. (Reid, 1992, p. 38)

If the functional manager is to provide help in the form of resources, viewing the employee as a process manager may assist in marshaling more appropriate resources. It means that the workers—the process managers—may require resources normally considered to be strictly in the realm of management:

> Only those people involved in the process can make the necessary improvements. To foster...improvement, organizations must not only accept ideas, but actively encourage employees to identify opportunities for "getting better." Organizations should give employees a formal quality improvement process that enables them to analyze opportunities for improvement. Employees also need access to resources that have been the traditional domain of management, including process improvement tools, information and time. (Johnston and Daniel, 1992, pp. 15-19)

2. Improving the Process Versus "Fixing" Workers

The functional manager must remember that resources are being acquired for process improvement and not to "fix" dysfunctional workers. Ensuring that employees have access to the appropriate resources and that skills are suitable to the process they are assigned to is one of the goals of process improvement. It is not to find fault with the workers.

As stated in Chapter I, only 15 percent of errors on the job are human caused. For successful PIP to occur, the workers must see PIP as a way to empower

and improve, not as a way for management to assign blame (Hoffer, 1988). The question functional managers should be asking in order to acquire the relevant resources for their human resources should be, "What went wrong with the process?" not, "Whose fault is this?" (Lee, 1991, pp. 21-26)

Recognizing workers as key resources also means that resources are being obtained to facilitate change and improvement, not to instruct workers on how to do their job. This distinction can be especially important in white-collar or "knowledge" work, where the employee's personal identity may be more involved in the process than is the case in production-type work. The willingness to wholeheartedly participate in PIP, and to develop skills key to successful implementation, may be directly affected by the functional manager's approach to resource acquisition:

> ...when organizations implement quality-improvement efforts for their white-collar workers, the emotional reaction is one of the hardest to deal with. It's crushing to some to think that just about everything they do can be reduced to a process....A need to improve the quality of work could miff quite a few people whose annual performance appraisals say they're doing a splendid job already. So companies that begin these (resource) efforts (should) make sure they're introduced as plans to improve processes, not products....A corporate lawyer might be quite proud of his success in filing patents for the company, but he doesn't have nearly as much of his ego invested in the process he uses to get it done. Indeed, he might be quite willing to (participate in) an improvement process if he knows that it will also change the ways in which researchers give him patent information and clerical people process his applications. (Geber, 1990, pp. 29-34)

To get the full benefit of a white-collar worker as a resource for PIP, the functional manager may also have to seek resources which define problem-finding in creative processes in a different manner than in other types of processes. To get a feeling for creative processes the manager may have to ask workers, "How do you

spend your time? How much of your time is spent on creative work, and how much is spent on administrivia, fighting fires and other kinds of things?" (Geber, 1990, pp. 29-34) This clearer view will facilitate process improvement and resource procurement.

3. Identifying Key Employees

If employees are a crucial resource for PIP, then the most crucial are those in key positions throughout the organizations, such as line supervisors (Galagan, 1992; Werner, 1993). Line supervisors are those who work most closely with the process workers. Enlisting the line supervisors' support and full participation in PIP will facilitate introduction and continuation of PIP with the "front-line" employees. These personnel will also be key teaching and training resources once education and training resources are identified.

While those with positional and functional authority may be the obvious choices for leading the PIP effort, key employees are also those who are perceived by fellow workers to be the "natural" or "informal" leaders (Cyr, 1992). It is important for the functional manager to identify these workers as key resources since:

> ...the pace with which you (the functional manager) will be able to move forward will be based on the support you are able to build at all levels. Identify (those) you must "win over" and target them for training and team participation. These people will become your foot soldiers and converts you need to spread the philosophy (of process improvement) throughout the organization. Right from the start, you must remember that total employee involvement is a fundamental principle of...process improvement. It is not something done by the few to the many, but by the many for the good of the whole. (Cyr, 1992, pp. 24-29)

Identifying and harnessing the power of this important resource early in PIP will make the functional manager's job much less difficult. The credibility of these essential personnel will help to overcome the initial resistance to change some employees may have. Supervisors and other leaders participating from the first will also make it easier for the functional manager to achieve a coherent and meaningful plan for implementation.

4. Identifying Essential Skills

Functional managers, as the resource supplier for process improvement, will find that acquiring and marshaling resources for their human resources will necessitate a "skill inventory." The goal of this inventory is to identify existing strengths and weaknesses in skills among those personnel designated as key to PIP. This way, additional resource requirements may be obtained in a more comprehensive and methodical manner. (Werner, 1993; Galagan, 1992)

Patricia A. Galagan, editor of *Training and Development* magazine, segments important skills into three major categories: *leadership skills*, *teamwork skills* and *technical skills* (1992, p. 25). With these three categories providing the framework, skills essential to PIP are discussed in greater detail below.

a. Leadership Skills

Leadership skills are perhaps the most important resource, and the most difficult to teach. Innate leadership abilities in key personnel, as discussed above, will greatly facilitate process improvement implementation. However, even when leadership skills are available, personnel may need to change their leadership

behavior by learning to become more receptive to ideas from others, to be coaches rather than controllers of people and to facilitate things rather than mandating them.

Influencing others to change management styles may be very difficult and should receive special attention when gathering resources for this aspect of PIP preparation. The culture of the organization plays a very large part in the success of changing management styles, since lower level leaders will watch upper management for their commitment and willingness to alter current practices. Without this sensitivity, the functional manager could alienate key personnel at a critical time and may find it very different to subsequently regain momentum. (Werner, 1993; Galagan, 1992; Johnston and Daniel, 1992)

As stated in the previous section, key personnel can become the organization's most effective teachers of process improvement methods. Identifying and improving teaching skills in key personnel who are perceived as leaders will add a special dimension to training. Discussed in greater detail in Chapter VI, using leaders known to employees in the roles of teachers will impart a special sense of "real world" applicability which is essential to effective adult learning (Johnson, 1992).

b. Teamwork Skills

Teamwork skills are critical to PIP as employees learn to recognize their work as part of a process which crosses functional and organizational lines. The ability to communicate effectively with co-workers, customers and suppliers is a primary part of teamwork. Some employees may have a natural ability to work

effectively in groups and may have previous training in group interaction skills and dynamics. (Werner, 1993; Yovovich, 1991)

This can be an especially powerful resource. Those with existing "people skills" strategically placed in group education situations can "round out" and facilitate training in groups with members who lack group work experience or skills. (Cyr, 1992)

Communication skills—oral and written—are important inter-personal abilities for productive process improvement. Effective communication will permit process "experts" to explain and detail the process to others. It will also help ensure effectual teaching and that the goals of the PIP effort itself are thoroughly understood by everyone.

c. Technical Skills

Technical skills are sometimes called the "quality tools" of process improvement (Galagan, 1992, p.26). These skills include technical proficiency in the process itself, and analytical and problem solving skills.

Being technically proficient in the process itself would include knowing the parameters, science and systems used to measure and evaluate the process. Subject matter experts are internal and external to the organization. External subject matter experts are discussed in Chapter VIII. Internal subject matter experts, as discussed above, are invaluable to the organization. (Reid, 1992)

Analytical and problem-solving skills, while certainly an innate ability to a certain degree, may also be enhanced by receiving training in analytical and

problem-solving methods. This is a critical area of process improvement, since the point of understanding the process is to enact appropriate corrective measures. Without these abilities present in people within the organization, PIP will not occur. (Werner, 1993; Galagan, 1992; Cyr, 1992)

5. Additional Considerations

There are additional concerns that may be important to the functional manager in the selection of personnel as key resources. As part of the initial screening process, the manager should try to ensure that candidates have time in their daily schedules for training and meetings. These obligations can be particularly time-consuming in the early stages of PIP implementation. The fact that personnel are in critical positions in the organization may mean that time away from their area of responsibility is limited. (Sibben, 1992)

Also, since process improvement requires a deliberate approach and careful planning, the functional manager should recognize that the implementation phase may require several months, or even one to two years, depending on the size and complexity of the organization (Galagan, 1992). The commitment of top management to PIP should mean that essential personnel are made available when necessary, but functional managers should be aware that this may not always be the case and plan accordingly (Sibben, 1992).

The amount of time key personnel have remaining with the organization should also be an important factor to the functional manager. A high employee turnover rate, such as that found in the DoD, can make it extremely difficult for the

functional manager to develop a consistent employee resource base, especially important in the implementation phase. (Swiss, 1992) Functional managers should ensure that departing personnel's talents are made as available to the organization as possible prior to their leaving.

Another factor that the functional manager may wish to consider is that, while creativity is not a skill which can be learned, it is certainly a skill which can be facilitated. The discussion of how to create an environment for discontinuous thinking is beyond the scope of this thesis; however, functional managers must appreciate that the creativity of their personnel is an invaluable and scarce resource. The success of PIP hinges on developing personnel to see processes in a new way so they may implement changes for improvement. Innovation and creation are imperative for this improvement. Developing a culture where these abilities are nurtured and encouraged is a way to ensure that the organization gains the maximum benefit of everyone's talent, expertise and skill. (Werner, 1993; Johnston and Daniel, 1992)

C. EMPLOYEE PERCEPTIONS OF PIP

In the current atmosphere of downsizing within the DoD, there is a danger that the functional manager will not be able to maximize the potential of human resources because of the employee's perception that process improvement is simply a tool for doing away with jobs. The functional manager should be aware that this perception may exist prior to implementation, the time when information about what management is attempting to do is sporadic and not fully articulated to all levels of

the organization. As Joshua Hammond, president of the American Quality Foundation of New York points out, "(If) employee participation is the linchpin of process improvement, how do you expect employees to address issues of process improvement when they plainly see it as a way to reduce the workforce?" (Benson, 1992, pp. 28-30)

That employees should perceive business process improvement in this light is not surprising. PIP can reduce headcounts by up 30-50 percent as unnecessary process steps are eliminated because they are unnecessary or as more and more of the process is automated (Ehrbar, 1993). If downsizing is not a fact of life for the organization, then the functional manager should so state during the resource identification and acquisition phase. PIP is a means of revitalizing an organization by maximizing the potential of its human resources with optimized processes. Process improvement is a means for doing more with less, especially important to DoD organizations, which may see themselves as understaffed. As Mr. Hammond states:

> There needs to be critical linkage between human-resource management and quality management so that the end results of process improvement work are workflow redesign, training and redeployment of affected workers, and overall alignment with (organizational) goals. It's going to take human resources working with the management of the organization to define how we are going to redeploy people, retrain people, move people—not lose people....I like to think of it as a way to say how you can operate your business and be 20 percent more (productive) without any increase in employment base. (Benson, 1992, pp. 28-30)

Any misconceptions employees may have about process improvement should be addressed as soon as management becomes aware of them. Providing clear and

concise information about PIP before, during and after its implementation is essential to maximizing the human resources upon which the functional manager depends.

D. SUMMARY

The human resources within the organization are the functional manager's most valuable internal resource. Seen by many to be the "soft issue" of PIP, employee issues can and do take up a great deal of the manager's time and can make or break a process improvement effort.

Identifying key personnel is an important first step in marshaling and acquiring resources. Knowing their abilities and limitations will provide a framework for obtaining resources to more fully develop leadership, teamwork and technical skills among all employees. Properly trained key personnel will be the "foot soldiers" of PIP, facilitating assimilation of the functional manager's planned process improvement effort. It is also important for the functional manager to rely most heavily on those essential employees who will be available for associated training and meetings, and who will be with the organization at least during the implementation phase.

Clearly communicating the goals of process improvement throughout all stages of its implementation will also facilitate the effort, since employee misconceptions may inhibit full participation. As one general manager states, "Gunslinging problem-solvers in the leadership ranks must be replaced by people who can bring out the best in employees. Management's responsibility is to tell people what the customer wants, put in place those people able to respond, reflect the results back on the people,

make sure everyone is trained, and make sure they have a queen and not a pawn on every square" (Johnston and Daniel, 1992, pp. 15-19).

VI. MARSHALING RESOURCES FOR EDUCATION AND TRAINING

As discussed in Chapter V, the most valuable internal resources an organization has for PIP are its employees. They are the ones who are most familiar with the organization's processes and who will have the most impact on the process improvement effort. It is the functional manager's responsibility to ensure that employees have the appropriate tools for PIP. These tools are provided by effective education and training.

As stated in the previous chapter, a "skill inventory" of employee abilities provides a framework for the functional manager to use in planning, organizing and acquiring education and training programs. However, the functional manager must take other issues into consideration when acquiring these resources, such as who will be trained, the best location for training and the most effective timing for training in relation to implementation of PIP. This chapter discusses these and related issues, and how they may impact the marshaling of resources for the process improvement endeavor.

A. EDUCATION, TRAINING AND PROCESS IMPROVEMENT

Japanese quality expert Kaoru Ishikawa states that quality control "begins with education and ends with education" (Cocheu, 1992, p. 23). As Eugene R. Hnatek (Cocheu, 1992), manager of Honeywell's Engineering Research and Development Department, points out, effective education and training can and should serve several

purposes which are essential to the successful implementation and continuation of process improvement within an organization. Effective education and training will (Cocheu, 1992, p. 24):

- foster an attitude of change among workers
- help make workers view the business from the customer's perspective
- demonstrate management's "buy-in" and commitment to continuous improvement and customer service
- transmit and instill knowledge to all workers
- encourage workers to apply their knowledge in day-to-day situations
- help build a culture that encourages change and empowers employee decision making
- build *esprit de corps* among workers
- encourage the use of problem solving skills

Further, effective education and training will equip everyone within the organization with the same tools for process improvement, providing a unified methodology so that everyone hears the same message and uses the same vocabulary (Reid, 1992). In other words, it ensures that "everyone learns to sing from the same songbook" (Wood, 1992, p. 260). This facilitates a "complete, logical and orderly approach to improving the work" performed (Reid, 1992, p. 44).

The functional manager should be aware of the serious ramifications of a failed education and training effort. Some managers have found that the results of ineffective programs are costly to the organization in terms of wasted time and wasted resources:

> Over the last decade, most of us have spent large amounts of money and time in training and education programs designed to transition us to a new and more competitive work culture. At the end of that period, many of us are dissatisfied with the results. Not everyone in the organization has bought-in, many have fallen in love with the tools and missed the point of the desired objective, and almost everyone occasionally reverts to the old way of doing things. (Johnson, 1992, pp. 21-23)

Failed training and education programs can also mean the following (Zagarow, 1990, p. 23):

- work force resentment
- lost quality improvement opportunities
- uninterested and disillusioned workers
- workers seeing team participation as a *pro forma* responsibility rather than as an opportunity for improvement

Understanding some of the basic issues which follow will help the functional manager, the key supplier to PIP, avoid common mistakes when marshaling this most essential process improvement resource for the organization.

1. Training Versus Education

Frequently, the terms "training" and "education" are used interchangeably. However, it may help the functional manager to view them as two distinct entities when marshaling resources for instructing the work force in process improvement. Training, as applied to process improvement, deals with the "how," focusing on (Zagarow, 1990, pp. 21-23):

- problem solving tools
- operations analysis
- process characterization

- benchmarking
- statistical measures

Education, on the other hand, is the "what" and "why" of process improvement and the management philosophy it encompasses, focusing on (Zagarow, 1990, pp. 21-23):

- strategic thinking
- visions and organizational values
- rewarding and recognizing
- leadership skills and management behavior development
- the impact of imbedded thinking and systems on organizational behavior and acceptance of process improvement

Understanding the differences between education and training will allow for a more coordinated instructional effort. Many experts in the field of process improvement instruction argue that laying the foundation for PIP with *education* will, in turn, lay the foundation for successful application of skills taught by process improvement *training*. (Cocheu, 1992; Galagan, 1992; Taylor, 1992; Zagarow, 1990) They argue that educating too late will nullify the effectiveness of training; without understanding the cultural change required for process improvement, the skills of employees cannot be properly applied.

2. Education and Training "Ownership"

As stated in previous chapters, tailoring the resources acquired for process improvement to the organization will facilitate PIP ownership. This will, in turn, improve the opportunity for success of PIP as employees see it as something relevant to them and the organization. (Johnstone, 1992) Internalizing and tailoring education

and training programs is the first step to creating ownership of process improvement (Johnson, 1992).

The functional manager should ensure that the education and training programs acquired have room for organizational ownership. As stated above, education is the "what" and "why" of process improvement. Included in that are the philosophy, vision and values of the organization. Other important issues are trust, integrity, employee self-esteem, building cross-functional relationships (team-building) and effective organizational communications. Further, using a skills inventory to tailor training will facilitate employees perceiving what is taught as relevant to them. This perception will help retention and application once they are on the job; it will also help ensure that process improvement is seen as more than a passing management fancy. (Johnson, 1992; Cyr, 1992)

B. EDUCATION AND TRAINING FOR KEY PERSONNEL

Chapter V discusses the positive impact key personnel may have on the organization's PIP effort. Many experts agree that training and educating these important resources first is essential to the overall success of a process improvement program (Galagan, 1992; Upton, 1987; Cocheu, 1992; Cyr, 1992). Instructing managers, supervisors and other formal and informal leaders before others is important "so that when the rest of the staff comes out of training they won't get shut down for practicing their new skills" (Galagan, 1992, p. 24). It also signals the commitment of the organization's primary personnel to process improvement, a key ingredient to its success (Johnson, 1992).

Acquiring training and education for key personnel first can give these principal members of the organization a realistic expectation of what PIP is and what it can do. It also helps to ensure they understand the tools that process workers will be given to work with and may help the development of "real world" goals for the improvement effort. (Cyr, 1992)

Additionally, this approach prepares managers and supervisors for the new roles they may have to fill as their employees are trained (Cyr, 1992). Instead of traditional management methods, managers may find they require alternate leadership techniques to fully utilize the new skills their workers are acquiring. Softening "role shock" can mitigate the dissonance which may occur when managers and employees are not moving in the same direction:

> Without any training or coaching (supervisors) are expected to change from their traditional mode of command and control to coach and facilitate. This is not a change that occurs easily or rapidly. As a result, they are confused, and front-line employees involved on process improvement teams get mixed signals. This becomes a major issue. This becomes even more important when one realizes that ultimately these are the people who must carry the message forward and make the change happen. (Cyr, 1992, pp. 24-29)

Another advantage is that once key personnel are educated and trained, some may receive further training and become internal resources as teachers of process improvement. Using these employees as instructors has several benefits for the organization. As stated in Chapter V, it may lend a "real world" dimension to the material being taught which can help to overcome some of the resistance to learning new concepts that adults may have (Johnson, 1992). It also facilitates ownership of the education and training program, allowing lessons to be specifically geared toward

processes which exist in the organization, rather than being general in nature. Additionally, using in-house instructors increases accessibility to teachers after formal class hours, a definite advantage for workers. (Zagarow, 1990)

Using managers and supervisors as teachers can be particularly valuable for PIP. This strategy:

> ...sends the supervisor's employees a message that (teachers external to the organization) can't send: "This is the way things are going to be from now on between you and me." That is a new reality few can deny. In addition, since the students all work together and report to the same boss, they can ask questions, discuss issues and "buy in" together; education seems to happen much more quickly and broadly. Such a succession of educational experiences can deploy policies, values and systems much more rapidly than disconnected and discreet classroom models. (Johnson, 1992, pp. 21-23)

However, while using key personnel as instructors has many advantages, the functional manager should be aware that these internal subject matter experts may be self-taught and may lack essential formal training in the processes with which they work. Zagarow (1990, p. 23) argues that frequently self-taught experts have developed nonstandard approaches which may convey a "skewed notion" of how things should be done. This occurs because the self-taught may be unfamiliar with tested and proven methods, or current practices, and how they may be applied to the processes with which they work. This could create gaps in their understanding of how their processes actually do—or were originally intended to—function. Passing on this incomplete view of the process may be counter-productive to improvement. In this instance, formal education and training of in-house experts prior to their becoming teachers is essential to the PIP effort. (Zagarow, 1990)

Increased reliance on internal teaching resources is "the...pattern most federal organizations follow, according to a 1989 Coopers and Lybrand telephone survey of more than 600 senior executives, generals and admirals" (Wood 1992, p. 263). The functional manager should keep in mind that internal teachers must be kept abreast of new process improvement techniques and procedures. Resources for this are discussed in Chapters VIII and IX.

C. EDUCATION AND TRAINING FOR PROCESS WORKERS

Realizing the advantages of using key personnel as instructors for training and educating key personnel is one important aspect of marshaling resources for teaching process workers. Another important aspect is that instructing process workers as "family groups"—that is, as cross-functional groups which include all of the workers involved in a process—has been found to be extremely effective (Upton, 1987; Johnson, 1992; Chang, 1993). This has the advantage of team-building and facilitating cross-functional communication on the job (Upton, 1987; Chang, 1993). It also helps to change the worker's view of the organization, which can be especially rigid and hierarchical among government employees (Hyde, 1992) .

The functional manager must also ensure that education and training resources are not acquired as an end to themselves. They must be marshaled to facilitate process improvement. There is a danger that management may "equate training success with the number of courses offered and the number of participants receiving training on a particular topic—rather than to any measurable improvements achieved as a result of training" (Chang, 1993, p. 26). A fixation with training, independent

of a strategy to apply what is learned on the job, can be a major stumbling block to successful PIP. As Geary Rummler succinctly points out:

> We train the daylights out of everybody. Two days seems to be the universal inoculation period. Then we run out of time, out of money, and out of interest before we get to the process level. And that's where we lose it. Processes are the guts of a business, and there is no permanent change until you change your processes. (Rummler, 1992, p. 30)

The goal should be, then, to ensure that the education, training and skills which process workers receive are actually applied to the processes with which they work. For this to happen, training should give employees the opportunity to immediately start using the tools they have been given. Otherwise, there is a danger that learned skills will be forgotten as time passes and enthusiasm wanes. (Rummler, 1992) Process improvement experts agree that to be effective, training must be just-in-time (JIT) (Rummler, 1992; Reid, 1992; Chang, 1993; Boyett, Kearney and Conn, 1992; Zagarow, 1990; Johnson, 1992).

JIT training is achieved by minimizing the amount of time between the learning and the application of what has been taught (Reid, 1992). This may mean dividing lessons into small, daily segments of two to three hours a day, augmented with immediate on the job reinforcement (Zagarow, 1990). This approach has been found to dramatically increase retention of newly taught material:

> Most people retain only a small percentage of what they see and less of what they hear. But if a student hears, sees and experiences...that student retains 70 to 80 percent. When the student puts the principles to work, he [sic] experiences (them) firsthand and is more likely to retain them. (Zagarow, 1990, p. 23)

The training can be overwhelming to employees otherwise, especially when it involves challenging basic precepts of the worker, as PIP may (Chang, 1993).

JIT training may also require managers and supervisors to coach employees in the application of their newly acquired skills. This coaching requires more than traditional oversight; rather, it is a focused effort by front-line management to encourage and facilitate the use of process improvement methods on the processes themselves. (Boyett, Kearney and Conn, 1992) Otherwise, the employee may never apply what is taught:

> The assumption is that sending people to quality training is enough, that the people who are sent will absorb some new skills and then apply these skills on their own back on the job. That rarely, if ever, happens. And almost any trainer with any experience knows it doesn't happen. The fact is that without coaching and follow-up assistance in applying new skills immediately on the job, most people will never use the new skills they have learned. Obviously, if people are to learn new skills, they must have some formal training. But, it takes more than just sending people to training classes...people must be coached in using the skills in the real world. (Boyett, Kearney and Conn, 1992, pp. 10-14)

As pointed out earlier in this chapter, the "what" and "why" of process improvement should be taught before the "how" of process improvement. This provides the process worker with a framework for applying newly acquired skills, and conveys the message that the skills learned are a vital part of PIP continuing as a driving force in the organization.

D. THE "WHERE" OF EDUCATION AND TRAINING

The functional manager may wish to consider arranging more than one location for process improvement education and training. This gives flexibility to the instructors and may facilitate PIP instruction. As previously stated, process workers should have the opportunity to follow up the "hows" of process improvement as soon as practicable after learning, with managers coaching the integration of new skills into

the day-to-day realities of the job. Some experts feel that this initial "tool" training is best taught in a formal classroom setting, using conventional teaching techniques (Johnson, 1992; Zagarow, 1990). On-site sessions may augment the classroom portion in those instances where the tools are so complex and so customized to the process that classroom instruction by itself is insufficient. Studies have shown that this approach is most effective for learning technical topics. (Johnson, 1992)

Studies have also shown that the "what" and "why" of process improvement are best learned in an informal atmosphere and setting, such as in a conference room. Off-site locations are best, but using an on-site area is acceptable as long as it is not a formal location, such as a classroom. The goal of this phase of process improvement education is to facilitate new ways of looking at the process and the organization. An informal atmosphere encourages interaction among individual workers and supervisors, ensuring maximum participation under the guidance of the teacher. It may also be helpful to identify these learning sessions as something other than a formal tutorial event, which may intimidate workers. (Johnson, 1992)

If training is conducted in "family groups" the functional manager may find it helpful to conduct sessions at a neutral location off-site. This may help to mitigate the effects of "functional loyalty" and encourage team-building. (Johnson, 1992) "Functional loyalty" is the allegiance workers may have toward their particular division or department. Even if the processes which employees work with cross functional boundaries, the employees' perspective may be extremely narrow due to their traditional "vertical" experience within the organization (Rummler, 1992).

Changing this to a "horizontal" perspective in consonance with the actual flow of the processes may be threatening, not only because it requires a changed way of thinking, but because vertical hierarchies may have promoted a protectionist philosophy of "claim or blame," depending on how well—or how badly—the processes are working (Rummler and Brache, 1991). Accordingly, accepting workers in other areas of the organization as team members may be equally as threatening. Providing "neutral turf," where no worker has a perceived advantage over another and where functional boundaries are removed, may be a first step in promoting a new point-of-view.

Managers and supervisors may also be most effectively educated and trained off-site. This helps to convey a sense of the importance of the training and also facilitates team-building; it may also minimize interruptions and distractions from work. (Zagarow, 1990)

E. THE PROCESS OF PIP EDUCATION AND TRAINING

The education and training effort cannot and should not be viewed by the functional manager as a one-time event. It is a process, and resources should be marshaled accordingly. (Chang, 1993; Taylor, 1992; Johnson, 1992; Zagarow, 1990) This is true not only because new employees will require education and training, but because the organization needs to remain current in the latest technology and techniques for on-going process improvement (Chang, 1993). Also, the effectiveness of education and training cannot be judged simply by monitoring evaluation forms given out at the end of a course. These may simply measure "more the charisma of the instructor than the skills, principles and applications acquired by the trainees"

(Zagarow, 1990, p. 26). The real test of the effectiveness of education and training programs is whether and how well the process workers apply what was taught on the job. The functional manager should evaluate how workers are doing 60 days, six months and one year after the initial training. This will help to ensure that the educational and training process are kept relevant and up-to-date, maximizing the resources expended. (Zagarow, 1990)

F. SUMMARY

Education and training programs are the most important resources the functional manager will acquire for the organization's most valuable internal resources, the employees. These programs must have visible management commitment and provide the opportunity for interaction between supervisors and workers. They must also be tailored to the organization's culture and processes to facilitate ownership. Most importantly, education and training must be delivered "just in time" to allow for direct application and maximum content retention. The location of courses, as well as who teaches them, also have a great impact on overall effectiveness.

Education and training are processes and require constant monitoring. Only by doing so will the functional manager ensure maximum benefits are received from these critical programs.

VII. RESOURCES FOR CONTINUING PROCESS IMPROVEMENT

One of the most challenging aspects of PIP for the functional manager may be the continuation of process improvement once it has begun. It is important for the functional manager to understand, however, that much of an organization's ability to continue process improvement may depend upon non-resource factors such as its institutional commitment to change and its ability to recognize and exploit opportunities for implementing innovation. The resources which the functional manager marshals for process improvement will provide some tools for implementing, managing and sustaining improvement and innovation. However, the overall fundamental changes in organizational culture, philosophy and attitudes essential to continuing process improvement are not simply resources which the functional manager can acquire and are beyond the scope of the thesis.

This chapter discusses the resources available to the functional manager for the continuation of process improvement once it has been successfully implemented. It also discusses some of the issues that should be taken into consideration when marshaling these resources, and how they may impact the overall PIP effort.

A. EMPLOYEES AS RESOURCES FOR CONTINUOUS PIP

Once the organization has made the necessary cultural and environmental changes essential to on-going PIP, the functional manager faces the challenge of providing resources which will facilitate its continuation on all levels. Previous

chapters have stressed that if the functional manager acquires resources with a long-term view, then on-going process improvement will be greatly facilitated. This view, combined with unwavering front-line management commitment as addressed in Chapter II, is, in itself, a most valuable resource for continuing process improvement.

As previously stated, employees will quickly perceive wavering front-line support and respond accordingly. As Werner points out, "Good people will always be the first to leave when they realize there is no support for keeping the process in control and improving it" (1993, p. 90). The loss of good people, whether workers actually leave or simply return to business as usual, can have a tremendous negative impact on the organization and the DoD.

Harnessing the power of employees as a resource for on-going process improvement should be a primary concern of functional managers. One way this might be done is to provide employees a formal methodology for submitting ideas, and ensuring that those ideas are acknowledged:

> ...an organization's only acceptable goals are "best" and "getting better." Continuous improvement is essential and achievable, and is the responsibility of every link in the chain leading to the customer. Organizations must seek continuous improvement of processes from individual employees, within functions, and across functional and company boundaries. To foster continuous improvement, organizations must not only accept ideas, but actively encourage employees to identify opportunities for "getting better." Organizations should give employees a formal quality improvement process that enables them to analyze and submit ideas for opportunities for improvement. (Johnston and Daniel, 1992, pp. 15-19)

Providing a method for feedback from employees may also bolster the workers' perception of management's commitment to PIP. One organization discovered that "the commitment to continuous improvement took hold only when management

frequently and systematically reviewed our progress. The absence of this level of management involvement was interpreted (by workers) as lack of management commitment" (Johnstone, 1992, p. 144).

This intense scrutiny of management by employees led one company president to declare that when organizations undertake long-term quality improvement programs, managers—particularly senior managers—are putting themselves "in a fishbowl" (Johnstone, 1992, p. 144). This perspective should help managers remember that their commitment to continuous improvement is constantly monitored by all levels in the organization and essential to its success.

Additionally, Swiss (1992) sees management commitment to, and worker acceptance of, continuous improvement as an important resource for preventing stagnation within the DoD in the coming years. He maintains that accepting change is a particular problem for employees in the public sector because of the many programs—such as management by objectives and program budgeting—that they may have seen come and go. Continuous improvement may overcome this stumbling block and facilitate acceptance of innovation in the future. Swiss states:

> Each earlier public management innovation was resisted by many workers. Moreover, once the systems were implemented, they were often taken for granted and therefore atrophied over time. For both these reasons, (the) continuous improvement principle, if internalized by workers and managers, may be (a) most valuable contribution. The principle suggests that receptivity to new approaches is essential for high performance. If fully accepted, this principle would lessen the resistance to future system innovations and would also decrease the likelihood that they would later stagnate. As a useful side effect, acceptance of this principle would lessen the temptation to oversell future changes, since overselling is often aimed at mitigating resistance. (Swiss, 1992, p. 360)

B. ADDITIONAL RESOURCES FOR CONTINUOUS PIP

Resources for maintaining process improvement once it has been implemented were addressed in previous chapters, such as customers and suppliers and education and training programs. These are briefly revisited here. The functional manager may also wish to consider using other internal resources for facilitating continuation of PIP, such as careful selection of the processes themselves, employee evaluations, rewards and bonuses. Chapter VIII discusses external resources which may assist in continuation of PIP.

1. Customers and Suppliers

Chapter IV addressed how customers and suppliers impact the process improvement effort. Since the customer defines the quality of the outputs, continuing customer satisfaction is key to continuing improvement. Similarly, since the quality of what goes into processes determines the quality of outputs, it is important to monitor suppliers as well. This may be done most effectively by establishing programs and methods to solicit and acknowledge customer and supplier suggestions, compliments, complaints or other inputs they may have. These inputs can be extremely valuable resources for the functional manager and critical to on-going improvement, especially as the environment, technology and customer needs change over time. (Bragar, *et al.*, 1992)

2. Education and Training

Chapter VI stressed the importance of education and training programs as a resource for PIP. As stated in that chapter, these programs are also vitally

important for continuous improvement as well. The functional manager should remember that "continuous improvement equals continuous learning" (Taylor, 1992, p. 55). Providing these programs and monitoring their effectiveness can be critical to on-going improvement.

3. Process Selection

Realizing success in the first process improvement effort the organization undertakes can be a significant resource for future endeavors and continuing PIP (Chang, 1993; Doran, 1986; Greenwood and Greenwood, 1984; Cyr, 1992; Miller, 1992). Previous chapters have mentioned the negative effects failed improvement efforts may have on an organization, but success has been found to breed success and promote continuous improvement (Chang, 1993). As one management consultant states:

> ...the visibility of better quality work from one area of an operation immediately triggers improvement in other areas...(this is) engendered either by peer comparison pressure, or by the direct requirement to improve the quality of a service on which the initiating area depends. A quality improvement drive is thus to some extent self-fuelling in its spread across an organization. (Doran, 1986, p. 63)

Therefore, the choice of the pioneer project can be extremely critical. Careful selection may prevent a multitude of problems and establish credibility for PIP as a permanent force for improvement:

> Most often, the stories about the results other (organizations) are enjoying and the initial high-powered education sessions lead to a high level of excitement and great expectations about how the company is about to be transformed. However, as reality sets in and time drags on, the initial excitement and enthusiasm can quickly wane. Great care must be taken in the selection of the pilot project. An early (10-12 weeks) and clear victory is imperative to demonstrate potential and build credibility and support. (Cyr, 1992, pp. 24-29)

Selecting the process which will "stack the deck" for success is an important task for the functional manager. The processes to best target as the first will depend upon many factors, including the type, size and complexity of the organization, as well as the experience and make-up of the workers. A primary point for the functional manager to remember is that it may be far better to select a "critical few" processes over the "trivial many" (Chang, 1993).

4. Recognizing Success

In conjunction with selecting the best process to realize early success for continuous improvement, it is also important to recognize that success. This will not only spread the word throughout the organization that PIP is working, but it serves other purposes as well:

> Success with process improvement relies very much on capturing the hearts and imaginations of the company's employees. It is very much a process of "winning people over." For this reason, it is important to celebrate the successes of process improvement teams. In many process improvement methodologies, "celebrate success" is a distinct step. It usually entails the organizational equivalent of a victory party, complete with...recognition by senior officers. To ensure that team successes are effectively communicated to the rest of the company, (one organization) is establishing a "Wall of Fame" in the company lunchroom to keep the employee base posted on progress. The "Wall of Fame" includes team pictures and the team's customized process improvement methodology. (Cyr, 1992, pp. 24-29)

As can be seen by this example, while recognizing success may be an important resource for continuing success, it does not have to be expensive. In addition to the above examples, bulletin boards and organizational newsletters may be used to both recognize and "spread the word" about the positive results PIP is realizing within the organization. (Doran, 1986)

5. Evaluations and Bonuses

Process improvement relies on the ability of process workers to perform effectively on teams which may cross functional boundaries. However, evaluations and bonuses within the DoD have been traditionally tied to individual achievements. Swiss (1992) and other management experts in the public sector (Milakovich, 1990; Hyde, 1992) see this dichotomy as a significant institutional barrier to implementation and continuation of process improvement. As Milakovich explains:

> The performance appraisal systems now used to set pay and bonuses in the public sector tend to encourage destructive competition. They destroy morale, perpetuate fear and inhibit motivation and creativity among employees. Some are rewarded, and others are punished, while the underlying causes of system variation are never examined. Exceptional employees are often not rewarded for the quality of services that they provide because the performance appraisal and merit selection systems emphasize results rather than process improvements. (Milakovich, 1990, p. 28)

The functional manager may, however, use evaluations as resources for continued process improvement by partially basing performance evaluations on the process worker's team's successes at implementing and sustaining PIP. Additionally, civilian performance bonuses may also be awarded using these criteria. The functional manager should seek assistance from the local pay and personnel offices for specific guidance.

To be an effective resource for continuing process improvement, the functional manager should link bonuses to "critical success measures," such as cost reduction and customer satisfaction (Walker, 1992). They should "be integrated within complete programs of organizational effectiveness that include learning to

solve problems in the workplace and in cross-functional teams, and communication about expectations, roles and business results" (Walker, 1992, p. 477).

6. Establishing Process Owners

Another resource the functional manager may wish to institute to facilitate continuous process improvement is the "process owner." Establishing process owners is favored by Geary Rummler (1992; Rummler and Brache, 1991) as a method for overseeing the entire process once it has been identified and analyzed. He finds this especially critical for processes which cross functional boundaries. Rummler argues that this approach ensures that the process always has an advocate, even when more than one department or division is involved. An augment of the organization's current hierarchy, process owners are managers who have divisional/departmental responsibilities, as well as the additional responsibility of "owning" a process as it flows through the organization.

Rummler argues that establishing process owners will facilitate the "pass-off" segments of processes, where outputs from one section move to become inputs of another. He states that this is the area where most problems occur, since no one is responsible for the "white space" between organizational sections. Process owners fill this void by managing the process throughout.

Rummler states that the process owner and the process line managers will co-exist harmoniously because that which is in the best interests of the process owner is also in the best interests of the line managers. He further states that this harmony

will occur because eventually all line managers will own a process; this commonalty will serve to solidify relationships throughout the organization.

Rummler does acknowledge, however, that a great deal of the success of this resource depends heavily on the people who are selected for this pivotal role. He states that prospective process owners should be from the more senior management ranks with a "major equity stake in the total process; that is, someone who has much to gain if the process succeeds and much to lose if it fails" (Rummler and Brache, 1991, p. 70). Furthermore, Rummler relates:

> ...the owner should be someone who understands the workings of the entire process, the effect of the larger environment on the process, and the effect of the process on the organization. Obviously, the owner also should have strong interpersonal skills—the ability to influence, persuade and lead. The process owner's responsibility is usually associated with a position, rather than an individual. (Rummler and Brache, 1991, p. 70)

The development of a process owner can be a time-consuming and delicate task, one which the functional manager only may wish to undertake after the process improvement effort is well underway. This alternative, however, may be extremely effective for maintaining process improvement and may be worth consideration in organizations where the PIP culture is firmly established. As Rummler states:

> In an organization that goes beyond "improvement projects" and institutionalizes process management, each key process has an owner. Institutionalized process management is more than adherence to a particular methodology. It is a culture. It's a culture in which process owners, teams and line managers practice continuous improvement rather than sporadic problem solving. Managers use their relationship and process maps to orient new employees, evaluate strategic alternatives and improve their service to internal and external customers. The needs of those customers drive goal setting and decision making. Policies, technology and personnel decisions all support the overriding goal: efficient and effective processes. (Rummler and Brache, 1991, p. 70)

C. SUMMARY

Continuation of process improvement depends primarily upon the successful integration of the culture of PIP into the day-to-day functioning of the organization. Providing information for establishing this culture is beyond the scope of this thesis; however, once it is developed the functional manager can provide resources which may facilitate the on-going improvement effort.

Just as employees are the most important internal resource for PIP, they are the most important resource for its continuation. Management commitment is one of the essential ingredients to worker acceptance of PIP as a vital, on-going force in the organization. Education and training must also be a continuing factor. In addition, management should create a method so that the innovations of workers for continuing improvement of the processes they work with are received, acknowledged and implemented when appropriate.

Customers and suppliers should also have a method for providing feedback. Keeping the focus on quality which pleases and meets the needs of external and internal customers will help to create a focus for improvement, one that is capable of responding to changes in customer requirements. Suppliers should also have a method for providing feedback, since the quality of their inputs will determine the quality of the organization's outputs.

The selection of a process which will "stack the deck" for success is another valuable resource which will spread the message of PIP throughout the workforce and so fuel continuation of improvement. Acknowledging success is also crucial, and can

be reflected in worker evaluations and bonuses, as long as carefully selected criteria are adhered to.

Once PIP is established, appointing process owners may also help to sustain improvement of processes. Carefully selected process owners may manage the process through transitional stages where there is no clear line manager; this is especially important when processes cross functional boundaries.

Continuous improvement is the area where the functional manager's resource marshaling and acquisition effort is never complete. As one manager points out:

> Things change: customer needs, technology, employees. The organization must continuously improve processes to keep up with customer demands and expectations. There is no finish line. Quality does not have an end. (Wood, 1992, p. 264)

VIII. EXTERNAL RESOURCES FOR PIP AND CONTINUING PIP

As stated in Chapter I, employees generally know they must improve and want to do so; it is up to management to show how they can and to provide the appropriate tools and resources (Doran, 1986; Johnston and Daniel, 1992; Reid, 1992). Resources that are external to the functional manager's organization are pivotal to implementing and continuing process improvement. The variety of external resources may be initially bewildering to the manager who knows very little about PIP and who must become the organization's subject matter expert in order to marshal and acquire resources for the use of the organization.

This chapter discusses external resources which are generally available to organizations within the DoD. Many of these resources are available through the federal government's Total Quality Management program. Addresses and telephone numbers for obtaining additional information about various resources addressed in this chapter are listed in Appendix D.

A. PIP AND TOTAL QUALITY MANAGEMENT

Total Quality Management (TQM) is a comprehensive, customer-focused management system that the federal government has adopted to improve the quality of their products and services. It is a way of managing the organization at all levels, top management to front-line, to achieve customer satisfaction by involving all employees in continuously improving the work processes of the organization. TQM

uses quantitative methods to identify and study processes for improvement opportunities. It represents a fundamental change in management style and philosophy that dramatically transforms the way "successful" organizations do business.

The federal government became interested in TQM after seeing the striking improvements private sector organizations realized using it. A formal effort was launched in the 1980s to implement TQM in as many federal organizations as possible. Accordingly, there is a wide array of resources available to DoD managers for TQM implementation and continuation. Understanding how TQM resources may be used for PIP will allow the functional manager to fully exploit this rich source of information and assistance.

Many of the goals of TQM parallel the goals of process improvement, since achieving continuous improvement in work processes is the core of TQM. Many of the experts referenced in this thesis are TQM consultants or heads of their organization's TQM departments.

At the foundation of TQM are three principles. The organization must:

- focus on meeting customer requirements and achieving customer satisfaction
- seek continuous and long-term improvement in all of the organization's processes and outputs
- fully involve all members of the workforce in the effort to achieve total quality

TQM is a management philosophy which may be used by the functional manager to implement process improvement and to realize continuous PIP. This may be a

strategic approach for the functional manager, since the resources for TQM are so plentiful and readily available. There are PIP-specific resources within the federal government's TQM program, and they should be fully investigated by the functional manager when marshaling and acquiring resources.

B. THE FEDERAL QUALITY INSTITUTE

The Federal Quality Institute (FQI) was established in 1988 to promote and facilitate the implementation of TQM and the philosophy of total quality throughout the federal government. The FQI is a particularly abundant source of information and assistance for DoD functional managers. Some of the services provided are outlined below.

1. Videotapes, Printed Resources, Courses and Information Centers

The FQI maintains an up-to-date, centralized listing of case studies, journals, periodicals, newsletters, seminars, courses, speakers, articles, videotapes and handbooks which focus on the practical application of total quality and process improvement in the federal government. It also has an Information Center which provides basic information packages on TQM and process improvement. Some of the printed materials are available free of charge directly from FQI; others are available from the Government Printing Office for a nominal fee. Stock numbers are provided for those publications which are available through the federal stock system. Sources and prices are available for materials available from the private sector.

The FQI provides lists of federal domain videos which may be reproduced without charge. It also maintains annotated lists, sources and catalogues of recommended videotapes which may be purchased.

The FQI is available for telephone consultations on how to establish an information center at the organizational level. It publishes a guide specifically for that purpose, and provides points-of-contact at DoD agencies which have established particularly extensive or comprehensive quality information centers to support their internal agency needs. These are designated as Federal TQM Information Centers and may be used by the functional manager to augment the library maintained at the FQI. A sampling of the diversity of these centers follows:

- the Air Force Quality Center at Maxwell Air Force Base, Alabama
- the National Guard Quality Center at the Professional Military Education Center at McGhee Tyson Airport, Knoxville, Tennessee
- the U. S. Army Reserve Personnel Center in St. Louis, Missouri
- the Total Quality Leadership Office for the Department of the Navy in Arlington, Virginia

If the functional manager is interested in printed materials and videotapes on a specific aspect of process improvement, the FQI will be able to provide catalogues and lists of resources for that topic. Again, some of the materials are available at no charge and some must be purchased.

2. Electronic Bulletin Board

The FQI maintains an electronic bulletin board which is accessible to federal, state and local government employees, academia and the private sector. It features

unlimited access, on-line help, E-Mail capability for private messaging, public messaging on a comprehensive list of TQM categories including process improvement and downloading capability for selected text files.

The data base includes a variety of topics, including:

- strategic planning
- focusing on the customer
- employee training, recognition and teamwork
- measurement and analysis of processes
- case studies of federal agencies
- resource updates for local information centers, including the latest books, journals, newsletters, seminars, courses, periodicals and videotapes
- federal quality improvement efforts and innovations, including user ideas, experiences, innovations and lessons learned
- messages of general interest not covered in the categories above

Additionally, the bulletin board recently acquired an Information Resources Management Clearinghouse. The Clearinghouse is supported by the Interagency Council on TQM in Information Resources Management. It provides a repository for messages and documents on TQM and process improvement principles and practices in the information resources management area.

The bulletin board is accessible by a personal computer or terminal with an internal modem, or a serial port and an external modem, and a telephone line. A communications software package is also required. The bulletin board is free of charge with the exception of the cost of the telephone call for users outside of the

Washington, D. C., area. It is accessible by FTS, and is available seven days a week, 0430 to 0200. Mondays and Fridays are particularly heavy usage days, and the FQI recommends that users avoid those days if possible.

Potential users may self-register on-line, and should be prepared to provide a password of any combination of three to eight letters or numbers, their name and that of their organization. The bulletin board is an excellent forum for keeping up-to-date on the newest resources and innovations in the area of process improvement. The FQI publishes the *Electronic Bulletin Board User's Guide* with complete instructions and points of contact, available free of charge to members of the federal government.

3. The FQI Database

The FQI maintains a computer database of reports (including applicable theses published by students of Naval Postgraduate School) and memorandums produced by federal organizations, including the DoD, which deal with quality initiatives and programs. The database provides users with the opportunity to do a methodical search for information by topic, tailored to the user's needs. Some examples of subject categories are:

- vision statements and quality policies of selected DoD organizations
- customer and supplier focus issues
- training plans and strategies
- process improvement team development

The database is maintained by, and is part of, FQI's Information Network. It is managed in conjunction with the U. S. Department of Commerce's National Technical Information Service (NTIS).

The database must be accessed through the NTIS system, which may require a user's fee. This fee is usually not prohibitive and is based on the amount of time the user is on line with the database and the number of records accessed. Many DoD agencies subscribe to the NTIS service; some libraries subscribe to commercial vendors for access. Frequent users of the NTIS should investigate becoming a subscriber to the service.

Once identified, documents may be obtained from one of three sources, which are specified in the database. These sources are the Government Printing Office, NTIS and the FQI. Documents provided by the Government Printing Office and the NTIS require a fee. Those provided by FQI are free. NTIS provides all documents in both printed and microfiche format. All materials provided by the Government Printing Office and the FQI are printed. Orders are usually shipped immediately upon request; total turn-around time averages two to eight days from customer request to receipt.

4. The *Federal Quality News*

The *Federal Quality News* is a newsletter printed by the FQI. It is published six times a year and contains articles and information on a variety of topics related to quality initiatives within the federal government. A recent issue, for example, had an article on how federal personnel appraisals and ratings may be used to reflect

quality and team performance initiatives. It also contained several articles concerning recent process improvement innovations in federal organizations and their results.

The newsletter routinely publishes case studies and points of contact for federal organizations which have realized exceptional gains through the use of TQM and process improvement. It is available to federal organizations for $13.00 a year; bulk orders receive a discount.

5. Quality Award Guidelines, Recipients and Subject Matter Experts

The FQI maintains a list of points of contact for winners of major quality improvement awards, including the Malcolm Baldridge National Quality Award. Additionally, the FQI sponsors the Quality Improvement Protype Award and the Presidential Award for Quality. These latter awards are presented to federal organizations which have made impressive gains in quality improvement. Several past winners for both awards were DoD organizations, as were all three 1993 winners of the Quality Improvement Prototype Award. The 1993 winners of the Prototype Award are the Arnold Engineering Development Center at Arnold Air Force Base, Tennessee; the Naval Air Warfare Center Aircraft Division at Lakehurst, New Jersey; and the Naval Aviation Depot at Cherry Point, North Carolina, which has the added distinction of being the award's first two-time winner.

The points of contact for the winners of these awards can be valuable resources. Functional managers may be able to locate organizations similar to their own which have excelled in implementing and continuing quality programs. Establishing communications with, or, if possible, visiting organizations which have

excelled at process improvement can be of inestimable assistance, and is recommended by quality experts (Wood, 1992; Hammer, 1992).

Many organizations use the guidelines of quality awards as a basis for their programs (Johnstone, 1992; Bragar, *et al.*, 1992; Johnston and Daniel, 1992; Chang 1993). The FQI can provide the award criteria for the awards listed here. Additionally, Xerox Business Products and Systems has provided the training material that helped it win the Baldridge Award in 1989 to the FQI Database.

The FQI also offers referral services to subject matter experts on a variety of quality and process improvement topics. Functional managers should freely avail their organizations of the assistance of the FQI; it is an exceptionally valuable resource for DoD organizations.

C. ADDITIONAL EXTERNAL RESOURCES

The Department of the Navy, the National Aeronautics and Space Administration and the Internal Revenue Service recently financed the one-time initiation fee of $10,000 required to join the International Benchmarking Clearinghouse established by the American Productivity and Quality Center. As a result of this funding, all federal agencies may now take advantage of the services they offer, including seminars and direct assistance from benchmarking experts.

Subject matter experts can be a rich resource for functional managers undertaking PIP. As previously stated, the FQI may be able to refer managers to such experts. In addition, each branch of the Armed Forces maintains a centralized TQM office. These TQM offices are sources of information and assistance, including

education and training courses and materials, periodicals, newsletters, videotapes, handbooks, as well as expert points of contact on a variety of process improvement topics. The TQM program for the Department of the Navy, called Total Quality Leadership (TQL), is described in Chapter IX.

Several DoD activities subscribe to the *TQM Resource Guide and Sourcebook*, including organizations from all four Armed Forces. The *Sourcebook* is published in Waltham, Massachusetts by TimePlace Incorporated and contains extensive information on current quality improvement products, awards, magazine article abstracts, services, seminars, consultants and other resources. The price of the *Sourcebook*, which is currently $395.00, includes monthly updates and a help hotline. The most recent edition contains a separate section for government organizations. Full copies of the magazine articles abstracted in the *Sourcebook* are also available for an additional fee.

D. SUMMARY

The DoD functional manager has many rich external resources for process improvement available. The institutionalization of TQM into the federal government provides valuable sources of information and assistance which can be applied to PIP, the core of TQM philosophy.

Functional managers affiliated with the Armed Forces should investigate the specific TQM programs sponsored by their service. This will greatly facilitate the implementation and continuation of PIP at their activity, and may expedite the marshaling and acquisition of resources.

IX. PIP AND TOTAL QUALITY IN THE DoN

As stated in Chapter VIII, the DoN has adapted the TQM philosophy of continuous improvement as Total Quality Leadership (TQL). The DoN's TQL program is a source of process improvement resources and should be the first place investigated by DoN functional managers implementing PIP. Functional managers in other branches of the Armed Forces should refer to their service's TQM resource office and/or the FQI. DoD functional managers not affiliated with a specific Armed Force should contact the FQI.

This chapter discusses the DoN's TQL program and the resources available for process improvement implementation and continuation. Addresses and telephone numbers for obtaining further information about resources mentioned in this chapter are listed in Appendix E.

A. TQL

The DoN's definition of TQL is (Total Quality Leadership Office, 1993, p. vii):

> The application of qualitative methods and the knowledge of people to assess and improve:
>
> - materials and services supplied to the organization,
> - all the significant processes within an organization, and
> - meeting the needs of the customer or end-user, now and in the future.

Some of the concepts critical to TQL are (Total Quality Leadership Office, 1993, p. vii):

- quality is defined by the customer's requirements,
- leaders of an organization are responsible for quality,
- increased quality comes from systematic analysis and improvement of work processes, and
- quality improvement is a continuous effort and is conducted throughout the organization.

Additionally, the TQL approach:

> ...emphasizes the major role that leaders have in achieving quality and productivity improvement for an organization. Under the TQL approach, leaders and managers are expected to achieve quality improvements through the use of process improvement. TQL emphasizes teamwork, particularly across divisions and departments. Two-way communication is necessary to identify areas for process improvement and to reduce fear of change. TQL is a systematic way to ensure that everyone within your command is doing the right things and in the right way. (Total Quality Leadership Office, 1993, p. vii)

TQL is not a substitute for leadership or battlefield tactical expertise. It is a method of meeting customer requirements through the use of process quality improvement, one which relies heavily on the knowledge and participation of everyone involved in the process. In short, it is a method for improving all of the support systems in preparation for war, including planning, training and logistical support. The focus of TQL is to provide a systematic means by which DoN personnel may identify, analyze and continuously improve the many critical and complex processes that are employed by the chain of command. Continuous improvement of the process should minimize variations in final output quality. This ultimately means that, whether called upon for use in day-to-day operations or life-or-

death situations, the process's outcome will be predictable and as close to optimum as practicable. (Total Quality Leadership Office, Fall 1991) This focus on quality and process improvement is clearly supported by the DoN's vision, guiding principles and strategic goals statement, included as Appendix F.

B. TQL RESOURCES FOR PIP

The DoN's TQL Office in Arlington, Virginia publishes the *Department of the Navy's Total Quality Leadership Source Guide* which is a comprehensive, annotated listing of books, readings, videotapes, courses, seminars and points of contact available to DoN functional managers. The TQL Office also publishes a quarterly newsletter, the *TQLeader*, which is an excellent source for identifying the most current resources available. The newsletter, DoN TQL courses and other TQL resources are discussed in greater detail below.

1. TQL Education and Training

DoN TQL education and training programs are taught by DoN TQL specialists and are administered by the Chief of Naval Education and Training. Courses are designed for key personnel—senior leaders (flag officers, commanding officers, executive officers, Senior Executive Service personnel and civilian service managers) and organizational TQL coordinators and quality advisors. There are two primary education sites: Naval Amphibious Base, Coronado, California and Naval Amphibious School, Little Creek, Virginia. Courses are also provided periodically in other geographic areas of DoN concentration. Course schedules and quotas are announced each quarter by separate Secretary of the Navy messages. The sponsoring

command must pay the travel and per diem expenses incurred by students; however, there are no costs for tuition or training materials.

Courses are designed so that key personnel will be able to prepare their organizations for the changes that quality improvement and TQL will bring. It also provides leaders with the tools required for process improvement, and teaches these key members what they need to know to be instructors for their organization's personnel, including the process workers. The courses cover a variety of topics, including team concepts and skills, methods for managing quality and the systems approach to process improvement. Some of the courses are designed to be taken sequentially; course lengths vary from four to ten days.

Command representatives receiving training from DoN TQL specialists receive a set of training materials, including instructor guides, viewgraph hardcopies, student guides, job aids, workbooks, articles, reports and books. Additional training materials required by TQL coordinators for instructing command members may be purchased through the Aviation Supply Office (ASO) in Philadelphia, Pennsylvania. Prices for training materials produced by the private sector are lower than the commercial price.

2. Reference Materials

As previously mentioned, the ASO is an excellent source of training aids. The ASO is also the inventory control point and distribution center for all materials supporting TQL courses. These materials include videotapes, illustrative group exercise kits, storyboards and readings. The ASO also carries materials which are not

currently used in TQL courses but which are recommended for command general libraries by the TQL Office. These materials cover a variety of quality improvement topics and the stock is constantly kept up-to-date; the prices for these are lower than if purchased commercially.

The *Source Guide* provides an annotated list of ASO titles, prices and stock numbers. Additionally, the NAVSUP P-2002 Publication, a microfiche of the Navy Index of Publications and Forms, now includes these TQL materials and has been issued to commands to assist in the ordering process. The *TQLeader* routinely publishes ordering information as new titles are added. Also, all video titles are available for temporary loan from the General Production Libraries at Naval Education and Training Support Center Atlantic, Norfolk, Virginia, and Naval Education and Training Support Center Pacific, San Diego, California.

The Defense Technical Information Center is another source of readings on TQM and process improvement, including case studies of DoN activities and implementation guidelines. As with the NTIS, there is a fee for these materials and they must be procured through registered users. If desired, these materials may be obtained from NTIS, but the fees are generally higher.

3. Referrals, Points of Contact and the *TQLeader*

Both the TQL Office and the *Source Guide* provide subject matter expert referrals and points of contact on a variety of improvement topics. Additionally, the *TQLeader* regularly publishes the names of DoD contacts.

As stated in Chapter VIII, the DoN helped to finance a one-time initiation fee to join the International Benchmarking Clearinghouse. The TQL Office also sponsored four people from the DoN for membership in that organization who provide specific guidance on how the DON can benefit from benchmarking. Additionally, the office has established a networking group in Washington, D. C., that meets monthly to share information about benchmarking and other process improvement efforts. The office can provide the names of these expert points-of-contact to functional managers who have specific questions, or require general guidance.

The *TQLeader* provides many of the same services as the newsletter published by the FQI, the *Federal Quality News*, except that it is tailored to DoN activities and personnel. A recent issue, for example, had updates on the Senior Leader Seminars, a case study about improving a software development process, a review of a recently released book on process improvement and the current restructuring of the TQL Office. The newsletter is distributed throughout the DoN without charge.

C. SUMMARY

The DoN's TQL program is an example of how quality and process improvement are being implemented in the DoD. The DoN functional manager should investigate the many varied and rich resources the program has available before checking other alternatives. If the program does not have the specific resource the manager requires, the TQL Office should be able to provide referral services.

X. CONCLUSIONS AND RECOMMENDATIONS

The process improvement process is the removal of activities from an organization's processes which add nothing of value to the final output. It is an on-going process of improvement which encompasses every facet of the organization and requires the involvement of every employee. Successful implementation and continuation of the process improvement process within the Department of Defense relies heavily on the ability of functional managers to marshal and acquire resources which are appropriate to their organizations' improvement effort. The issues presented in this thesis may help the functional manager devise a framework for evaluating their organizations' requirements, which may, in turn, provide a methodical approach to obtaining available resources.

The commitment of management to the process improvement process is key to formulating a framework, as are maintaining a long-term vision of what the organization hopes to become and understanding how process improvement relates to that vision. Communicating this vision and organizational commitment to employees will facilitate their acceptance of, and participation in, the improvement endeavor. This is essential, because employees are the organization's most valuable internal resources for implementing and maintaining process improvement. Not only will they use the tools provided by management for the process improvement process, but, as customers and suppliers of cross-divisional processes, they play a key role in

determining the quality of the organization's final outputs. Employees' knowledge, skills and abilities are also a potential source of teaching expertise.

The most valuable resource the functional manager can provide to employees is an effective education and training program, tailored to the requirements of the process workers. This program must be on-going, not only to educate new employees, but to ensure that process improvement remains a dynamic, evolving force within the organization.

External customers and suppliers are also important resources for implementing and maintaining process improvement. Customers set the requirements for the organization's outputs; a thorough understanding of those requirements should shape the processes, which are improved by removing activities that add nothing of value. Maintaining this understanding will help to ensure that process improvement is sustained as customer needs change. Additionally, the quality of supplier inputs can greatly influence the quality of the organization's outputs. Communicating expectations to suppliers may assist in the improvement effort, as may soliciting their advice on how to become a better customer for them.

Once implemented, continuing process improvement may rely on internal factors which, if used strategically by management, can become important resources. These factors include carefully selecting initial projects which "stack the deck for success," recognizing and celebrating success, rewarding employees for improvement achievements through bonuses and evaluations and establishing "process owners" for overseeing those processes which cross functional boundaries.

"Total quality management" is a comprehensive, customer-focused management system which uses quantitative methods to identify and study processes for improvement opportunities. It represents a fundamental change in management style and philosophy that transforms the way organizations do business. The institutionalization of this management system into the federal government provides valuable sources of information and assistance which may be applied to the process improvement process, the core of total quality management philosophy. The Federal Quality Institute, located in Arlington, Virginia, provides resources which the Department of Defense functional manager may use to implement and continue process improvement, including referral services, an electronic bulletin board, a database, a newsletter, quality award guidelines and information on how to obtain videotapes and printed materials. Additionally, each branch of the Armed Forces sponsors their own total quality management program. For example, the Department of the Navy has a centralized office which provides services similar to those offered by the Federal Quality Institute, tailored to meet the specific requirements of Navy and Marine Corps activities. These services include courses, a newsletter, reference materials, referral services and a database. Many of the resources provided by the Federal Quality Institute and the Armed Forces' programs are free, or available at reduced prices.

Other external resources available to the Department of Defense functional manager for implementing and continuing the process improvement process are: Federal Total Quality Management Information Centers, located throughout the

United States; the International Benchmarking Clearinghouse and the *Total Quality Management Resource Guide and Sourcebook*, a reference book for information on current quality improvement products, awards, services, seminars, consultants and other resources.

Since this thesis focuses on the Department of the Navy's program, those of the Departments of the Army and Air Force may be a potential area for further research. Also, this thesis only briefly touches upon potential institutional barriers to effective process improvement, such as management turnover. Research for this topic revealed that there may be other barriers, specific to the Department of Defense, which should be identified so that functional managers are aware of these obstructions prior to undertaking process improvement. Some of the potential institutional barriers are: the potential loss of funding resulting from improved efficiency, the existence of short-term focus due to the Department of Defense's financial planning cycle, and a long-standing dependence on hierarchical management in government organizations, particularly in the military. This research may be supplemented by studying organizations which have undertaken the process improvement process and dealt with these issues, whether successfully or not. Organizations which have not undertaken process improvement might also be surveyed to discover what general perceptions exist about process improvement, and how those perceptions might hinder implementation. This may be a way to establish the current general knowledge and awareness level of process improvement within the Department of Defense.

Process improvement is a methodical and cohesive approach for "working smarter, not harder," especially important in the current atmosphere of austere budgeting and staffing. Providing the means for implementing and continuing the process improvement process is perhaps one of the most important tasks the Department of Defense functional manager will undertake. It is the goal of this thesis and the associated research to facilitate this critical task as much as possible.

Appendix A
The Role of the Functional Manager
Helping the Organization Improve the Process

From *Thinking, Believing, Acting, as if:*	*To* *Thinking, Believing, Acting as if:*
• The enterprise operates in a static unchanging environment.	• Explosive external change is inevitable and provides opportunities for those able to create competitive advantage from change.
• Internal stability and good control are defined by absence of negative deviations to plans and objectives. If these occur, find (and blame) the individual responsible. If there is time, fix the problem.	• Stability and control are statistically defined by the natural variation of the process. Improvement comes from working on the system of common, mutually interacting causes if the pattern of variation indicates stability; otherwise, leave it to the discretion of local "process managers" to identify and remove "special causes" if they can. If not, provide help.
• Managing means maintaining a stable internal state. Mechanistic management principles and rigid structures are needed for control and avoidance of change.	• Managing means maintaining a balance between prevention of change and creation of positive change. Management structures enable learning and self-organization in order to anticipate and meet changing environments and new situations.
• Control is achieved by pre-established, inflexible response patterns given in the "book", which prescribes appropriate behaviors.	• Control is achieved by enterprise shared values and beliefs, knowledge of mission, purpose, and customer requirements.
• Customers are outside of the enterprise and are within the domain of marketing and sales.	• Everyone inside the enterprise is a customer of an internal or external supplier. Marketing concepts and tools can be used to assess internal customer needs and communicate internal supplier capabilities.
• The functional provinces are in a zero sum game where there must be a loser for every winner. People cannot be expected to cooperate unless it serves their own or their unit's best interests. Parochialism is a fact of business life.	• Self-interest and the greater good are served simultaneously by serving one's customers. Everyone wins or no one wins.
• The enterprise is a collection of separate highly specialized individuals and units linked within the functional hierarchy. Lateral connections are made by intermediaries close to the top of the provinces.	• The enterprise is a system of interdependent processes linked laterally through a network of collaborating suppliers and customers. The processing systems are connected to the enterprise's mission and purpose through a vertical hierarchy of micro to macro processes.
• The manager's job is to do the subordinates' planning, and inspect the work to make sure plans are followed.	• The manager's job is to manage his or her own process and its interfaces and give subordinates the capability to do the same. Managers provide leadership rather than over-invention in the process of their subordinated, who are viewed as process managers.
• People are passive contributors, with little autonomy, doing what they are told and nothing more.	• People are contributors, valued for their creativity and intelligence.

From: "The Quality Professional's Role in the New Economic Age" by Edward M. Baker, *Quality Progress*, November 1987, p. 21

What is "process improvement"?

It *is*:

- A management philosophy—the way to do things
- Breakthrough, "what if" thinking—find a better way
- Continuous, never-ending improvement and small steps—"hitting singles"
- A structured, team-driven, disciplined approach to improving business processes and customer satisfaction
- Conveyed by the actions of management
- Long-term, permanent, a way of life
- Applicable to all business processes
- Problems seen as opportunities for improvement

It ***is not***:

- A new program
- "If it ain't broke, don't fix it"
- Miracles over night—"grand slams"
- Fire-fighting, crisis management or command and control
- Short-term projects
- Limited to particular problems

Appendix B

Adapted from: "Building Success Through Process Improvement" by Joe Cyr, *CMA Magazine*, March 1992, p. 29.

PRESCRIPTIONS FOR LEADING CUSTOMER FOCUS

1. ***STOP*** thinking of yourself as the key customer of your work force.

   START thinking of yourself instead as the key supplier to your work force, one who empowers them to please your organization's customers.

2. ***STOP*** building employee commitment primarily to functional departments.

   START building employee commitment to cross-functional collaborations that serve the customer.

3. ***STOP*** expecting employees to treat the customer "right" just because you say so.

   START encouraging customer care by treating the work force as you would have them treat the customer.

4. ***STOP*** basing your evaluation of customer satisfaction primarily on customer-complaint data.

   START seeking customer input and feedback proactively in the spirit of prevention and continuous improvement.

5. ***STOP*** setting your priorities for improvement by relying primarily on internal measures and evaluations.

   START establishing improvement priorities that are based primarily on customer evaluations.

6. ***STOP*** using measures of success based primarily on short-term financial targets.

   START applying measures of success based primarily on long-term customer satisfaction.

7. ***STOP*** relying primarily on your intuition to develop your strategy.

   START using the voices of your customers and employees as the primary drivers of your strategy.

8. ***STOP*** collecting data primarily through formal methods (surveys, etc.) and then disregarding the data when you make your major strategic decisions.

   START collecting customer-focus data primarily through the customer contacts of everyone in the organization, and use that data as the key criteria for all decisions.

Appendix C

Adapted from: "What's Wrong With TQM?" by Joseph H. Boyett, A. T. Kearney and Henry P. Conn, *Tapping the Network Journal*, Spring 1992, pp. 10-14.

Appendix D
Addresses and Telephone Numbers of Organizations Referred to in Chapter VIII

1. The Federal Quality Institute (FQI)
   P.O. Box 99
   Washington, D. C. 20044-0099

   Telephone Numbers:
   General Information ..... (202) 376-3753
   376-3747
   Bulletin Board General Information ..... (202) 376-3749
   Federal Quality News ..... (202) 783-3238

   Information on all services offered by FQI, including the FQI/NTIS TQM Database, referrals, catalogs, and publication ordering information can be obtained by calling the general information telephone numbers.

2. National Technical Information Service (NTIS)
   U. S. Department of Commerce
   5285 Port Royal Road
   Springfield, VA 22161

   Telephone Numbers:
   NTIS Database Access ..... (703) 487-4929
   Publication Ordering Information ..... (703) 487-4650

   Information on the FQI/NTIS TQM Database may also be obtained by calling the FQI general information telephone numbers.

3. Superintendent of Documents
   U. S. Government Printing Office
   Washington, D.C. 20402

   Telephone Number:
   Publication Ordering Information ..... (202) 783-3238

4. TQM Research Guide and Sourcebook
   TimePlace Inc.
   460 Totten Pond Road
   Waltham, MA 02154

   Telephone Number:
   Ordering Information ..... (617) 890-4636

5. Miscellaneous telephone numbers:

Interagency Council on TQM in Information Resources Management, General Information . . . . . (202) 482-0765

International Benchmarking Clearinghouse Information . . . (703) 602-8976

Appendix E
Addresses and Telephone Numbers of Organizations Referred to in Chapter IX

1. DoN Total Quality Leadership Office
   Suite 2000
   Airport Plaza II
   2611 Jefferson Davis Highway
   Arlington, VA 22202-4016

   Telephone Number:
   General Information/Referral ..... (703) 602-8990
   DSN 332-8990

2. Defense Technical Information Center (DTIC)
   Building #5
   Cameron Station
   Alexandria, VA 22304-6145

   Telephone Number:
   General Information ..... (703) 274-7633
   DSN 284-7633

3. Naval Amphibious School
   TQL Code 10, Bldg. 401
   Naval Amphibious Base, Coronado
   San Diego, CA 92155-5084

   Telephone Number:
   General Information ..... (619) 437-5167/66
   DSN 577-5167/66

4. Naval Amphibious School
   TQL Department 9, Bldg, 3504
   Norfolk, VA 23521-5200

   Telephone Number:
   General Information ..... (804) 464-7452/51
   DSN 680-7252/51

5. Naval Aviation Supply Office
700 Robbins Avenue
Philadelphia, PA 19120-5099

Telephone Numbers:
TQL Material Information ..... (215) 697-2261/5655/2159
DSN 442-2261/5655/2159

Information on NAVSUP P2002 microfiche is also available at these numbers

6. Naval Education and Training Support Center, Atlantic
General Production Library

Telephone Number:
Videotape Loan ..... (804) 444-3013
DSN 564-3666

7. Naval Education and Training Support Center, Pacific
General Production Library

Telephone Number:
Videotape Loan ..... (619) 532-1342
DSN 522-1342

8. *TQLeader*
Quality Support Center
1411 S. Fern Street
Arlington, VA 22202-2896

FAX Number:
Editor ..... (703) 692-1637

APPENDIX F
DoN STRATEGIC GOALS

We, the leaders in the Department of the Navy, will optimize the effectiveness of the Navy-Marine Corps team by leading our people and managing our systems as an integrated force within a quality-focused organization. We will work to influence our future by translating our vision, mission, and guiding principles into goals, strategies, and actions so that resources and improvements are aligned with the same intent.

We believe that everyone has a legitimate contribution to make in accomplishing these goals; Navy and Marine Corps; military and civilian; operational and support. In starting this translation, we have developed a vision and identified five major strategic goals for the Department of the Navy. These strategic goals are: Integration; Human Resources, Education, and Training; Acquisition; Innovation and Technology; and Facilities. We believe that continuous improvements in these areas are mandatory if the Department of the Navy is to meet the challenges that confront us.

The Department of the Navy will:

Integration

- operate a fully integrated Navy-Marine Corps team that will provide maximum operational capability, capitalizing on the synergism of our operating forces and our support establishment.

Specifically, the DON will:
- develop broad strategies and tactical doctrines that maximize naval service combat effectiveness within the framework of joint and combined operations of the National Military Strategy.
- create and maintain a consolidated naval acquisition, maintenance, and logistics infrastructure that is efficient and responsive to the building, support, and sustainability needs of our naval service forces.
- integrate the focus and efforts of staffs and management organizations to facilitate interaction; and educate our personnel, both military and civilian, in multiple disciplines that affect naval service capabilities and applications.

Human Resources, Education, and Training

- continuously improve the quality of our military and civilian work force through fact-based, innovative systemic changes affecting recruitment, training, and quality of life.

Specifically, the DON will:
- identify and remove the barriers to equal opportunity for all our people.
- improve the military recruiting system through better requirements determination, resource allocation, and day-to-day operations.
- improve determination of military training requirements, feedback systems, delivery of training to meet fleet requirements and foster student success; properly fund training and eliminate redundancies in the system.
- improve the civilian recruiting and hiring system through better requirements determination and resource allocation any by assessing national versus local recruiting responsibilities and needs.
- improve civilian training by improving requirements determination, training delivery, and by adjusting resources to match requirements.
- enhance the working environment to improve the performance of quality military and civilian personnel.

Acquisition

- continuously improve the acquisition process to achieve timely design, development, test, manufacture, and support of maritime weapon systems for our Navy-Marine Corps team.

Specifically, the DON will:
- reduce the time from concept definition to fleet introduction
- stress reduced operating and support costs in all aspects of system design; field fully supported systems with emphasis on interoperability and operational availability.
- foster contractor/government working relationships, emphasizing teamwork built on trust, sound business practices, and the highest standards of ethical behavior. Ensure that an industrial capability for unique naval requirements is maintained.

Innovation and Technology

- continuously improve the process of identifying and introducing new technologies. Ensure our recognition as a world leader in key maritime technologies. Create a climate that fosters innovation and invention.

Specifically, the DON will:
- improve the process of selecting and evaluating technology opportunities; focus DON investment on those technologies that form the foundation of future Navy-Marine Corps system developments; introduce cost-effective technologies into our system as they become available.
- improve the interaction with our sister services, academia, industry and our allies to support the DON technology investment.

Facilities

- operate an adaptable and responsive shore facilities establishment that is properly sized and properly supported to allow continuous improvement in the quality of service to the operating forces; that consists of

well-maintained and attractive facilities, resulting in improved living and working conditions and increased productivity at all its installations; and that consistently performs in an environmentally responsible manner and contributes to the quality of life in the communities of which it is a part.

Specifically, the DON will:

- define and implement "quality standards" for facilities that support mission requirements, family and bachelor housing, family support functions, and morale, welfare and recreational activities.
- provide the resources to achieve the defined quality standards over time and maintain the support establishment at these levels; in addition to traditional military construction, consider innovative financing and management arrangements (e.g., cost-sharing, public-private venture, leasing).
- integrate environmental awareness into all DON planning, management, and operations to comply with all applicable environmental laws and to protect the natural resources found on Navy and Marine Corps installations. Minimize waste, conserve energy, and adopt pollution prevention measures to avoid adverse impacts on the environment.

Our vision and associated strategic goals require a *significant transformation* throughout the naval services. By pursuing our vision, we believe we will enhance our ability to determine our future. Achieving these strategic goals will be neither quick nor easy; however, we believe that our people are capable of meeting the challenges confronting the Navy-Marine Corps team. We recognize that all members of the team have valuable contributions to make to our strategic efforts. As leaders, we will strive to provide the direction and support required for this transformation.

H. Lawrence Garrett III
Secretary of the Navy

Gen Carl E. Mundy Jr.
Commandant of the Marine Corps

ADM Frank B. Kelso II
Chief of Naval Operations

BIBLIOGRAPHY

Ash, Ronald W. "The ABCs of Developing TQM." *Security Management*, September 1992, pp. 82-84.

Baker, Edward M. "The Quality Professional's Role in the New Economic Age." *Quality Progress*, November 1987, p. 21.

Benson, Tracy E. "IQSSM Defines the Gold." *Industrial Week*, January 20, 1992, pp. 28-30.

Boyett, Joseph H.; Kearney, A. T.; and Conn, Henry P. "What's Wrong With Total Quality Management?" *Tapping the Network Journal*, Spring 1992, pp. 10-14.

Bragar, Gary; Murray, Colleen; Paranteau, Cal; Cormaci, April; and Bailey, Marvin. "The Semi-Complete Quality Professional's Cookbook." *Journal for Quality and Participation*, December 1992, pp. 48-60.

Chang, Richard Y. "When TQM Goes Nowhere." *Training and Development*, January 1993, pp. 23-29.

Cocheu, Ted. "Training With Quality." *Training and Development*, May 1992, pp. 23-32.

Cyr, Joe. "Building Success Through Process Improvement." *CMA Magazine*, March 1992, pp. 24-29.

D. Appleton Company, Inc. *Corporate Information Management: Process Improvement Methodology for DoD Functional Managers*. Fairfax, Virginia: D. Appleton Company, Inc., 1992.

Doran, P. K. "A Total Quality Improvement Programme." *Management Decision*, November 1986, pp. 54-64.

Ehrbar, Al. "The Price of Progress: 'Reengineering' Gives Firms New Efficiency, Workers the Pink Slip." *Wall Street Journal*, March 16, 1993, sec. A, p. 1.

Federal Quality Institute. *Introduction to Total Quality Management in the Federal Government*. Washington, D.C.: Government Printing Office, May 1991.

Ferguson, Gary A. "Printer Incorporates Deming - Reduces Errors, Increases Productivity." *Industrial Engineering*, August 1990, pp. 32-34.

Galagan, Patricia A. "How to Get Your TQM Training On Track." *Nation's Business*, October 1992, pp. 24-26.

Geber, Beverly. "Improving the Quality of White Collar Work." *Training: the Magazine of Human Resources Development*, September 1990, pp. 29-34.

Goldratt, Eliyahu M. and Cox, Jeff. *The Goal: A Process of Ongoing Improvement.* New York: North River Press, 1986.

Greenwood, Frank and Greenwood Mary. "Productivity Brief." *Journal of Systems Management*, November 1984, pp 38-41.

Hammer, Dianne. "The Long and the Short of It." *Telephone, Engineer and Management Supplement*, January 15, 1992, pp. 25-27.

Hammer, Michael. "Reengineering Work: Don't Automate, Obliterate." *Harvard Business Review*, July-August 1990, pp. 104-112.

Harrington, H. J. *The Improvement Process: How America's Leading Companies Improve Quality.* New York: McGraw-Hill Book Company, 1987.

Hoffer, William. "Errors on the Job Can Be Reduced." *Nation's Business*, April 1988, pp. 62-64.

Hyde, Albert C. "The Proverbs of Total Quality Management: Recharting the Path to Quality Improvement in the Public Sector." *Public Productivity and Management Review*, Fall 1992, pp. 25-37.

Johnson, John G. "The Problem With TQM Education." *Tapping the Network Journal*, Spring 1992, pp. 21-23.

Johnston, Catharine G. and Daniel, Mark J. "Total Quality Management: Customer Satisfaction Guaranteed?" *CMA Magazine*, April 1992, pp. 15-19.

Johnstone, John W. "A Point of View: Life in a Fishbowl—A Senior Manager's Perspective on TQM." *National Productivity Review*, Spring 1992, pp. 143-146.

Joiner, Brian L. "Total Quality Management vs. Management by Results." Madison, Wisconsin: Joiner Associates Inc., 1985.

Kirkham, Roger L. *How to Thrive on Chaos and Achieve Total Quality*. Salt Lake City, Utah: American Training Alliance, 1991.

Koska, Mary T. "Surveying Customer Needs, Not Satisfaction, is Crucial to CQI." *Hospitals*, November 5, 1992, pp. 50-53.

Lee, Chris. "The Customer Within." *Training*, July 1991, pp. 21-26.

Loubert, S. "Process Management: The New Role of Managers." Bloomington, Minnesota: Process Management Institute, Inc., 1988.

Melum, Mara M. "Total Quality Management: Steps to Success." *Hospitals*, December 5, 1990, pp. 42-44.

Milakovich, Michael E. "Total Quality Management for Public Sector Productivity Improvement." *Public Productivity and Management Review*, Fall 1990, pp. 19-32.

Miller, John A. "Selecting Areas for Improvement." *CMA Magazine*, September 1992, p. 33.

Moen, R. D. and Nolan, T. W. "Process Improvement: A Step-by-Step Approach to Analyzing and Improving a Process." *Quality Progress*, September 1987, pp. 62-68.

Perigord, Paul. *Achieving Total Quality Management*. Cambridge, Massachusetts: Productivity Press, 1990.

Redesign Experts and Practices Team. *Corporate Information Management Process for Improving Processes: IDEF Modeling Findings and Recommendations*. Naval Postgraduate School, August 1992.

Reid, Leigh. "Continuous Improvement Through Process Management." *Management Accounting*, September 1992, pp. 37-44.

Rummler, Geary. "Managing the White Space." *Training and Development*, August 1992, pp. 26-30.

Rummler, Geary A. and Brache, Alan P. "Managing the White Space." *Training*, January 1991, pp. 55-70.

Sibben, Mark T. "Improving Work Processes Improves Productivity, Quality." *Healthcare Financial Management*, December 1992, p. 17.

Swiss, James E. "Adapting Total Quality Management (TQM) to Government." *Public Administration Review*, July/August 1992, pp. 356-361.

Taylor, Sally. "Managing a Learning Environment." *Personnel Management*, October 1992, pp. 54-57.

Total Quality Leadership Office. *Starter Kit for Basic Process Improvement*. Washington, D. C.: Government Printing Office, December 1992.

Total Quality Leadership Office. *TQLeader*. Washington D. C.: Government Printing Office, Fall 1991, May and September 1992.

Upton, Richard. "Xerox Copies the Message on Quality." *Personnel Management*, April 1987, pp. 34-37.

Walker, Terry. "Creating Total Quality Improvement That Lasts." *National Productivity Review*, Autumn 1992, pp. 473-478.

Werner, Joseph G. *Managing the Processes, the People and Yourself*. Milwaukee, Wisconsin: Quality Press, 1993.

Wood, Patricia B. "How Total Quality Government is Being Achieved." *National Productivity Review*, Spring 1992, pp. 257-264.

Yovovich, B. G. "Becoming a World Class Customer." *Business Marketing*, September 1991, pp. 16-29.

Zagarow, Herbert W. "The Training Challenge." *Quality*, August 1990, pp. 22-26.

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